



Yield10 Researchers Publish Research in Plant Cell Reports Describing the Development of its Camelina Platform as a Model Crop for Novel Yield Trait Discovery

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WOBURN, Mass., June 21, 2018 (GLOBE NEWSWIRE) -- Yield10 Bioscience, Inc. (Nasdaq:YTEN), a Company developing new technologies to create step-change improvements in crop yield to enhance global food security, today announced the publication of research describing the development of its Camelina platform as a model crop for novel yield trait discovery.

The research paper titled "[Camelina sativa, an oilseed at the nexus between model system and commercial crop](#)" was published in *Plant Cell Reports*, a monthly peer-reviewed journal featuring articles on new advances in all aspects of plant cell science, plant genetics and molecular biology. The authors document the use of Camelina in a variety of research programs focused on improving crop yield and suggest that if yields can improve significantly, Camelina itself may be of interest as a commercial crop in the future. Camelina has been explored for production of biofuels, animal and aquaculture feed, specialty nutritional oils and other uses.

The paper describes the approach Yield10 researchers have taken to develop the Company's Camelina platform and highlights the advantages of utilizing the crop for novel trait development, including short life cycle, ease of genetic transformation and performance of the crop under field conditions.

The authors of the study also highlight the use of the Camelina platform to evaluate yield performance of very complex novel metabolic pathways to increase seed yield. The paper includes the case study of the development and testing of multi-gene complex carbon fixation pathways, derived from metabolic engineering studies expressed by seed specific promoters. In greenhouse studies in Camelina, the researchers observed large increases in seed yield in engineered plants where the best plants produced seed yields of approximately 2.2 times the control plants. Seed oil content was also significantly increased, such that the total oil produced per plant in the best plants reached 2.4 to 2.8 times the total oil produced in the control plants. The weight of individual seeds in the best plants was approximately 1.3 times the weight of individual seeds in the control plants. The researchers noted that such complex pathways cannot be stably engineered to create a commercial plant line, however the work is important to understand the potential for seed yield increases and to devise new solutions to yield based on smaller gene sets.

"This research describes the approach we've taken to develop Camelina sativa as a world-class platform for crop yield trait discovery," said Kristi Snell, Ph.D., Chief Science Officer at Yield10 Bioscience, Inc. "In an early use of our Camelina platform, we evaluated the yield performance of complex multi-gene carbon fixation pathways derived from metabolic engineering studies. Subsequently, we have used this system extensively in the ongoing development and event selection for C3003, a novel yield trait gene for C3 crops. In addition, we have recently deployed the platform for screening novel oil content boosting traits created using genome-editing. A key value of the platform is that it allows the relatively rapid creation of plant events that can be tested in the greenhouse and field tested under real-world conditions. Further, new traits tested in our Camelina platform appear to perform as predicted in early studies in canola, highlighting the potential value of the system for trait development in major oilseed crops."

"Our early interest in exploring the theoretical limits of crop yield led to the creation of complex microbial gene systems aimed at boosting carbon capture in plants deployed using our Camelina platform," said Oliver Peoples, Ph.D., President and CEO of Yield10 Bioscience. "In greenhouse studies, we discovered that these complex genetic systems can double seed yield and oil content in Camelina. While such gene systems are far too complex to be commercialized, the results provide important insights and allow us to benchmark the limits of seed yield as well as inform our advanced metabolic flux modeling, a core component of our GRAIN computational trait gene discovery platform. This work also suggests that the use of metabolic engineering to de-bottleneck carbon flow in plants may lead to the development of novel systems consisting of perhaps two to three yield trait genes that may produce significant improvements to seed yield, and provide meaningful advances toward achieving global food security."

The authors of the *Plant Cell Reports* paper include, Meghna R. Malik, Jihong Tang, Nirmala Sharma, Claire Burkitt, Yuanyuan Ji, Marie Mykytshyn, Karen Bohmert-Tatarev, Oliver Peoples and Kristi D. Snell, all of Yield10 Bioscience or Yield10's wholly owned Canadian subsidiary Metabolix Oilseeds, Inc.

About Yield10 Bioscience

Yield10 Bioscience, Inc. is focused on developing new technologies to achieve step-change improvements in crop yield to enhance global food security. Yield10 has an extensive track record of innovation based around optimizing the flow of carbon in living systems. Yield10 is leveraging its technology platforms and unique knowledge base to design precise alterations to gene activity and the flow of carbon in plants to produce higher yields with lower inputs of land, water or fertilizer. Yield10 is advancing several yield traits it has developed in crops such as Camelina, canola, soybean and rice. Yield10 is headquartered in Woburn, MA and has an Oilseeds Center of Excellence named Metabolix Oilseeds, located in Saskatoon, Canada.

For more information about the company, please visit www.yield10bio.com.

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Safe Harbor for Forward-Looking Statements

This press release contains forward-looking statements which are made pursuant to the safe harbor provisions of Section 27A of the Securities Act of

1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. The forward-looking statements in this release do not constitute guarantees of future performance. Investors are cautioned that statements in this press release which are not strictly historical, including, without limitation, the use of technology to successfully identify targets and develop systems for increasing crop yield, the potential of Camelina as a commercial crop, the predictive value of the Camelina platform, and progress by Yield10, constitute forward-looking statements. Such forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated, including the risks and uncertainties detailed in Yield10 Bioscience's filings with the Securities and Exchange Commission. Yield10 assumes no obligation to update any forward-looking information contained in this press release or with respect to the matters described herein.

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