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Author: Stacy D. Singer Jitao Zou Randall J. Weselake



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Review: Abiotic factors influence plant storage lipid accumulation and composition

Stacy D. Singer^a, Jitao Zou^b, Randall J. Weselake^{a,*}

^aAlberta Innovates PhytoCentre, Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, Alberta, Canada, T6G 2P5

^bNational Research Council Canada, Saskatoon, Saskatchewan, Canada, S7N 0W9

*Corresponding author: randall.weselake@ualberta.ca

Highlights

- Plant-derived oils from oilseed crops are made up largely of storage triacylglycerol
- Much current research focuses on enhancing oil production and composition in plants
- The influence of abiotic stress on lipid biosynthesis has hindered these efforts
- There is a great need to develop strategies with which to lessen this impact

Abstract

The demand for plant-derived oils has increased substantially over the last decade, and is sure to keep growing. While there has been a surge in research efforts to produce plants with improved oil content and quality, in most cases the enhancements have been small. To add further complexity to this situation, substantial differences in seed oil traits among years and field locations have indicated that plant lipid biosynthesis is also influenced to a large extent by multiple environmental factors such as temperature, drought, light availability and soil nutrients. On the molecular and biochemical levels, the expression and/or activities of fatty acid desaturases, as well as diacylglycerol acyltransferase 1, have been found to be affected by abiotic factors, suggesting that they play a role in the lipid content and compositional changes seen

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