**Field Production of Novel Plant Oils in Camelina**

Plant seed oils offer many advantages over synthetic or mineral oils, including biodegradability, low toxicity, and exceptional lubricity. Seeds from the ornamental plant burning bush (*Euonymous alatus*) contain up to 95% acetyl-triacylglycerides (acetyl-TAG), a class of oils with low viscosity and improved cold temperature properties that could be used as food emulsifiers, biodegradable lubricants, hydraulic fluids, and as a drop-in diesel biofuels. Using burning bush seeds, researchers in the Great Lakes Bioenergy Research Center (GLBRC) identified the gene that encodes diacylglycerol acetyl transferase (*Ea*DAcT), which is involved in one of the last steps of acetyl-TAG synthesis (Durrett et al., 2010). Introduction of the *Ea*DAcT gene in several model organisms, including *Camelina sativa*, significantly increased the production and accumulation of seed acetyl-TAG. In an extension of the initial work, Liu et al. (2015) evaluated the production acetyl-TAG and field performance of several high-oleic and wild-type lines of Camelina engineered to overexpress EaDAcT. Results show a significant increase in seed acetyl-tag oil of engineered Camelina lines grown in the field and that the levels and physical properties (i.e. viscosity, crystallization temperature, and caloric content) of seed oil are similar to lines grown in the lab. However, the high levels of acetyl-TAG seed oil had minimal or no impact important agronomic measures such as seed weight, seed yield, total oil content, and harvest index. The authors conclude that establishing crop production of Camelina acetly-TAG will allow sufficient quantities of acetyl-TAG to be produced for further agronomic and commercial development.

**References:**

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