



Oil Seed Crops as Biorefineries: Increasing Oil Production in Plants

Plant-derived oils are a major commodity, providing a main source of calories and essential nutrients for humans and animals and are an increasingly important source of renewable materials for industrial feedstocks and biofuels. Oils are the most energy-dense products that plants produce in large quantities using solar energy and CO₂. However, insufficient supply of the feedstock has been one of the biggest challenges in using plant oils as biofuels and other renewable industrial materials.

Researchers at the the Donald Danforth Plant Science Center and the University of Missouri-St. Louis have identified new genes, new pathways and new mechanisms to increase oil production and accumulation of long chain fatty acids in plants, particularly oil seed crops. The inventive methods permit maximizing crop value by facilitating the modulation of oil composition in plants and developing oil seed crops as biorefineries and as bioindustrial oils crop platforms using molecular techniques. The findings are applicable to significantly enhancing oil production in photosynthetic organisms including corn, soybean, rapeseed, sunflower, brassica, etc.; and the business opportunity is substantial with significant potential target markets.

POTENTIAL APPLICATIONS

- Biofuels/biodiesel, Renewable materials
- Industrial feedstocks
- Flavor and fragrance industries
- Cooking, food production; Omega-3 for use in food products
- Detergents
- Cosmetics, pharmaceuticals, dietary supplements
- Paint and surface coatings

BENEFITS

- Results from small field trial in soybean:
 - 15% oil production increase in soybean
 - The increase in oil production comes at the expense of carbohydrates, not protein
 - Germination is not affected
 - No change in the 100-seed weight

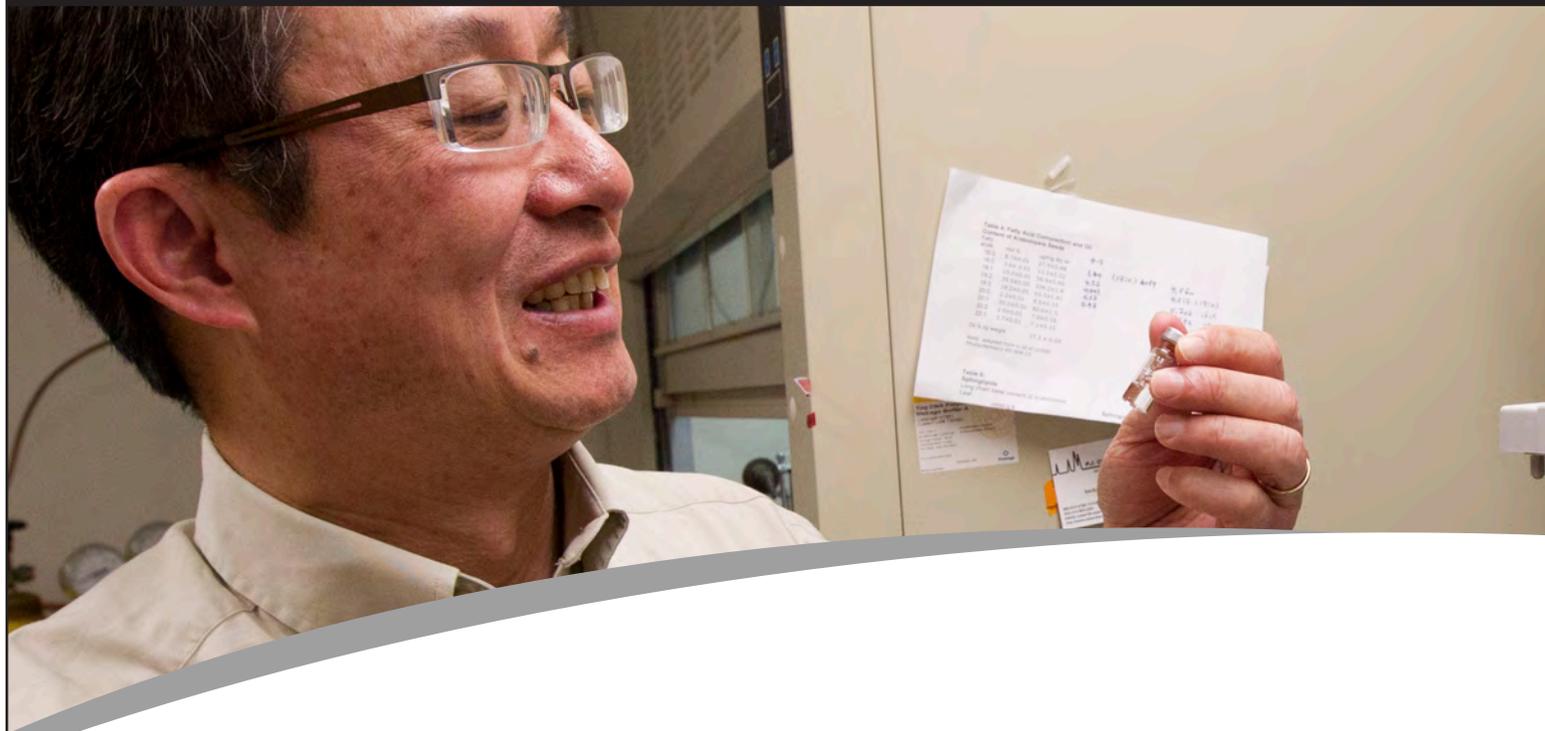
The majority of energy consumed worldwide comes from fossil sources (petroleum, coal and natural gas). However, these sources are limited and will eventually be exhausted. Alternative new and renewable fuels have the potential to solve many of the current environmental problems and concerns, from air pollution and global warming to other environmental improvements and sustainability issues.

IP PROTECTION

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