



CANOLA RESEARCH PRIORITIES

The U.S. Canola Association (USCA) strives to increase U.S. canola production to meet the growing public demand for a healthier food supply and environment. With the lowest saturated fat content of all common vegetable oils, canola oil is good for both the heart¹ and the engine as a cooking oil and biodiesel feedstock, respectively. Canola seed also contains roughly 40 percent oil – double that of soybeans.

Canola is one of the few crops that the United States does not grow enough of to meet its own demand; domestic supply is outpaced by current demand at a ratio of 1:3. With the push to remove *trans* fat from the U.S. food supply for public health and growing interest in canola for biodiesel production, demand for the crop is continuing to increase. As a result, obstacles to growing more canola domestically need to be overcome.

Retaining existing canola production and expanding it will require continued CSREES funding to 1) further develop the number of reliable, high-yielding canola varieties – both spring and winter types; 2) develop and refine canola cropping systems in rotation with existing crops; 3) develop no-till practices for canola; 4) improve harvesting and storage practices; 5) improve pest management; and 6) interface new technologies, practices and varieties with growers. For these reasons, the USCA believes it is critical for CSREES to continue to fund the National Canola Research Program through the Alternative Crops Program.

PRIMARY RESEARCH NEEDS: CROP PRODUCTION

Specific research areas for increased canola production in five U.S. growing regions include:

Northern

- Further evaluating the efficacy of straight combining to harvest canola
- Evaluating the effects and incidence of canola diseases, such as blackleg and sclerotinia
- Improving drought tolerance and shatter, blackleg and sclerotinia resistance in canola varieties
- Increasing total oil content per acre
- Improving the value of canola meal
- Examining industrial uses of canola oil

Great Plains

- Evaluating and developing highly productive, regionally adapted winter varieties
- Examining planting, cropping and tillage systems as well as fertilizer requirements, rotations and grazing management
- Developing production and marketing technology that can show farmers canola is valuable with wheat rotation
- Optimizing no-till production for winter canola to maximize yields and minimize pest damage
- Breeding for improved oil quality (up to 80% oleic acid) and higher oil content in winter varieties
- Improving canola performance for biodiesel production

¹ In October 2006, the U.S. Food and Drug Administration authorized the following health claim for canola oil: *Limited and not conclusive scientific evidence suggests that eating about 1½ tablespoons (19 grams) of canola oil daily may reduce the risk of coronary heart disease due to the unsaturated fat content in canola oil. To achieve this possible benefit, canola oil is to replace a similar amount of saturated fat and not increase the total number of calories you eat in a day. One serving of this product contains [x] grams of canola oil.*

Pacific Northwest

- Developing more herbicide resistant canola varieties adapted to the region
- Improving frost tolerance in spring canola varieties
- Identifying traits for early emergence, less frost damage and high yield potential
- Developing integrated crop management systems that include canola as a rotational crop
- Developing bio-related products from canola and rapeseed that enhance economic feasibility and efficiencies of production

Southern

- Developing regionally adapted winter varieties with cold hardiness, disease resistance, yield potential and high grain quality
- Evaluating the impact of canola on double-crop rotations in the region
- Assessing the use of herbicide-tolerance technology and herbicide carryover issues for canola
- Examining the cause and prevention of insect and disease damage in canola
- Evaluating canola as a feedstock for biodiesel

Midwest

- Identifying winter-hardy, high-yielding winter canola varieties that are regionally adapted
- Determining optimal planting dates, seeding rates, pest control strategies and fertility requirements
- Examining potential ecological and economic impacts of canola on the region's cropping system

SECONDARY RESEARCH NEEDS: NUTRITION

While USCA research priorities are primarily focused on production, they are not limited to that arena. Canola oil is already widely recognized as one of the healthiest oils in the marketplace, however, there is potential for making it even healthier by reducing its already low saturated fat content and increasing its monounsaturated and/or polyunsaturated fat levels.

More research on the potential benefits of the plant-based omega-3 fatty acid in canola oil, alpha-linolenic acid (ALA), needs to be conducted. ALA is currently associated with moderate heart benefits, but its effects are generally less potent than the long-chain marine omega-3s EPA and DHA. There are fewer well-designed clinical studies with ALA, so less data exist for assessing it

Moreover, the rate of conversion from ALA to EPA and DHA in the human body is very low. Exploring how canola could produce EPA and DHA, which have several well-documented health benefits, could lead to important public health ramifications.

Other areas of nutrition research worth examining are the effects of replacing a highly unsaturated oil like canola oil for other sources of fat in the diet in people at risk for and/or with type II diabetes or heart disease. The benefits of doing so have already been assessed for the general population², but not specifically for those at risk for or with these diseases that are significantly impacted by diet.

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² Johnson GH, Kris-Etherton PM, Keast DR. Dietary Modeling Shows that the Substitution of Canola Oil for Fats Commonly Used in the United States Would Increase Compliance with Dietary Recommendations for Fatty Acids. *Journal of the American Dietetic Association* 2007; 107 (10): 1726-1734.