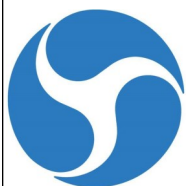


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U.S. Department of
Transportation



Project Title: *Development of Winter Safflower as a Biodiesel Feedstock*

DR. DICK AULD

Project Goal

The overall goal of this proposal was to successfully introduce a fall-seeded safflower crop that is well adapted to the Lower Great Plains Region.

Objective 1: Genetic Enhancement: Research conducted under this objective will develop broad based F3 populations of winter safflower that are segregating for increased oil content (42-44%) and high concentrations of oleic acid in the oil (70%+ C18:1).

Objective 2: Agronomic Evaluation: This research will develop planting date, irrigation management, fertility and harvesting guidelines necessary for the successful production of winter safflower in this region.

Objective 3: Economic and Life Cycle Analysis: This segment of the research will compare the economic, water use budget and carbon life cycle analysis of safflower in direct comparison with other crops grown in the region.

Project Outcomes

- At production sites above Interstate 20 and below Interstate 40 (Albuquerque to Oklahoma City), winter survival of existing genotype of winter hardy safflower was sporadic and limited by extended exposure to temperatures below -10°C . Above Interstate 40 there was no consistent survival of winter hardy safflower.
- Winter hardy genotypes appeared to be homozygous when fall planted. However, when spring seeded, these genotypes segregated for time to flower, oil content, and tolerance to the major foliar pathogens found here in Lubbock, TX.
- After allocating energy by co-products, the total energy required to produce a gallon of biodiesel is 22,414 Btu.
- Safflower farmers would produce safflower at any seed price above \$0.06/lbs. Safflower farmers maximize profits with irrigation (in an average year) of about 6.5 inches per acre, with minimal required fertilizer application (depending on nitrogen content of soil).



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