



U.S. Department of
Agriculture
National Institute of
Food & Agriculture



Project Title: ***Development of Safflower as a New Biomass Energy Crop for the Lower Great Plains of North America***

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Project Goal

The overall goal of this project is to successfully introduce a frost-seeded safflower crop that is well adapted to the Lower Great Plains Region to ensure sustainable production of biodiesel. This new class of cold tolerant safflower will allow plant growth during cooler months of early spring, reducing evapo-transpiration and overall demand for irrigation water. The research involved 1) Genetic enhancement of cold tolerant safflower lines for increased oil content; 2) Agronomic research on planting date, irrigation management, fertility and harvesting guidelines for production of cold tolerant safflower; and 3) Extension/Outreach to deliver the production guidelines to growers and processors in this region.

Project Outcomes

- Four varieties with excellent frost seeding adaptation were screened at Stillwater and Fort Cobb, OK (2012-2013 growing season) and at Stillwater and Chickasha, Ok (2013-2014 growing season).
- Yield data collected from the Stillwater location showed significant difference between safflower variety means. With variety TTU 651 producing a significantly higher yield than TTU 615 with no differences between these varieties and the remaining varieties. At the Chickasha location, TTU 580 produced significantly lower yields than remaining treatments. The Stillwater location produced an average of 1326 Kg ha⁻¹ which was significantly greater than yields of approximately 617 kg ha⁻¹ achieved at the Chickasha location.
- Plant stand data collected from the Stillwater and Chickasha locations showed no significant difference between safflower variety means. However, there was a significant difference in plant stand counts with the Stillwater planting location producing 10 plants/m which was greater than 6 plants/m achieved at the Chickasha location. This difference was apparently due to lower moisture status of soils at the Chickasha location at planting.



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