

## Cottonseed Oil as Promising Biodiesel in Future

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With recent increases in petroleum prices, there is renewed interest in vegetable oil and their derivatives as alternative fuels for diesel engines. There are more than 350 oil-bearing crops identified, among which only sunflower, soybean, cottonseed, rapeseed, peanut, coconut, and palm oils are considered as potential alternative fuels for diesel engines. However, the production of bio-diesel must yield to the needs of human consumption. Cottonseed oil may be a good choice. The consumption of cottonseed oil as edible oil has been decreasing. On the other hand, the rapidly increasing price of fossil fuels has created an opportunity to produce bio-diesel from cottonseed oil. The keys for the application of cottonseed oil as bio-diesel are increasing the yield of cottonseed oil and optimizing the fatty acid composition. Research at Texas Tech University over the past decade has produced 2 mutants with desirable characters of high yield of cottonseed oil and potential bio-diesel production. They selected among chemically mutated populations of upland cotton, and they identified six M8 lines with increasing seed oil content. They also select a mutation with low residual lint on the surface of the cottonseed, which could enhance extracted oil yield from cottonseed by 10% while significantly reducing the cost of oil extraction. RNAi has been proved effective in improving the desirable fatty acid composition in cottonseed oil. The oleic acid and stearic acid content increased from 13% to 78% and from 2% to 40% respectively. So it may be possible to develop cotton lines with proper fatty acid composition for bio-diesel production taking advantage of RNAi. It was recorded that the cotton planting area was about 5 million hectares and the corresponding amount of cottonseed oil is 2 million tons, 45% of which was consumed generally as food and industrial applications. It was reported that 1M tons cottonseed oil as bio-diesel could satisfy the consumption of all the buses of Beijing for at least 3 years. We suggest strengthening the research on developing and utilizing cottonseed oil while increasing the research on pathogen resistance, fiber quality improving and so on.