Title: **Development of High-Oil Peanuts for Use as Biodiesel Fuel**

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Project Objectives

1. To improve the competitiveness of peanut in the biofuel/biodiesel arena by increasing the oil content of peanut from about 48% to near 60%, thus increasing by 25% the gallons of oil that can be produced from an acre of peanuts.

2. To accomplish Objective 1 we will work within the cultivated species of peanut to develop lines containing 50 to 57% oil. We will also work with wild species of peanut to increase the oil percentage to above 60%.

Results

With the 2009 funding for Biodiesel peanuts we have made several new cross combinations with high oil plant introductions and Texas Peanut Breeding lines. We have tested the parents of the several crosses and we are confident we will have higher oil percentage progeny. This in fact, has proven true. Our testing has proven that we have cultivated lines that have above 57% oil. These lines are not high yielding nor are they disease resistant so we have made numerous crosses with these lines to combine the high oil genes with the high yield and disease resistance genes.

During this funding period we also completed the BC2 cycle with 10 high yielding parents of three of the four market type peanut lines. There have been insufficient seed quantities to date to run oil percent analysis on the progenies.

We also have continued our efforts with the wild species in efforts to introgress even higher levels of oil in future generations of our development lines. None of these lines have produced sufficient seeds for analysis at this stage so we are not 100% certain that the high oil genes are present in hybrids we are now working with for development.

Under this funding we have tested several hundred lines (Lubbock Lab.), including 250 BC4 introgression lines from our mapping population. The highest of these was 54+%. Other lines from the Peanut Mini-Core collection of ca. 108 lines were tested, with varying results, but most were not higher than existing materials.

The bottom line on this project is that we are definitely making progress because we already have derived lines above 57% oil that are fully cross-compatible with our highest yielding cultivated varieties with high O/L and nematode resistance.