HOME MADE BIODIESEL

A cost analysis of making biodiesel for on farm use.
Diesel is a big input on any operation.

Diesel prices are pushing $4.00 a gallon.

If a savings can be made with biofuels, then why not.
Making the biodiesel

- Making the biodiesel is not that heard.
- You need oil, methanol, and lye.
- Oil can be pressed from canola.
- Methanol and lye can be found on the internet in bulk.
Canola was developed in the 1970's. It was done by removing erucic acid and glucosinolates from rapeseed.
Methanol has to be 99% pure.

Most camp firer starters are 99% pure methanol.

It can be found cheap on the internet.

575ml per gallon of oil to be converted.
Lye can be anything above 85% pure when using potassium hydroxide.

The lower the percent the more you need.

Can be found on the internet in bulk.

20.81 grams per gallon of oil to be converted
For the lye, sodium hydroxide could also be used.

It is harder to mix and more dangerous.

If you mess up the mixing the toxins could make you sick or kill you.
Presses aren’t cheap.
The one I found is a 6ton press and it cost $6000.00 after shipping.
6ton press means it will press 6 tons of seed in 24 hours.
Mixers aren’t as expensive as press.

A plastic, heated mixing tank cost $3200.00

The tank has to be plastic of stainless.

If its made with steel the chemical reaction will cause the tank to fall apart.
Other equipment needed

- Tank to store oil in.
- Motor for press.
- Tank to mix lye and methanol in (must be plastic of stainless)
- PPE (gloves and masks)
- Place to store finished product.
- Place to store canola
- Place to store by-products.

- The motor has to be at least 5hp
- 5hp motor will use 6 kw a hour.
What I plan to use.

- Empty glyphosate totes.
- Empty chemical tanks.
- Motor off an auger.
- On farm diesel tanks for the finished product.
- Empty grain ben or grain truck for the seed.
Pressing process

- Pressing gets two products.
- Oil
- Meal
- The meal can be stored and used or sold as feed.
- Oil can be stored in a tote for further processing.
First mix lye and methanol in an empty chemical tank with the top cut off. Lye must dissolve. Heat oil in mixing tank to 130 degrees. Mix everything together for about ½ hour to a hour. Let the mixture sit for at least a day or more. Do this in the mixing tank or in a tote. Once it has settled there will be only two things in the tank. Biodiesel and glycerin.
Glycerin

- Can be distilled but that cost a lot to do.
  1. Feed additive
  2. Soap
- Un-distilled
  1. Nitro-glycerin
- Cant burn it.
Costs

- Seed cost $480.00 a ton.
- Methanol $170.00 for 55 gallons.
- Lye $89.00 for 50lbs of 90% pure.
- Press cost $6000.00
- Mixer cost $3200.00
- Press motor cost $.4692 an hour to run.
Cost to make 3000 Gallons

- $480*30=$14,400
- 575ml*3000=1725000 ml
- Convert to gal.=455.7
- $3.09*455.7=$1408.11
- 20.81gr*3000=62430gr
- Convert to pounds
- 137.7lbs
- $1.78*137.7=$245.11
- Press $580 per year.
- Mixer $310 per year.
- 120*.4692=$56.30
- Add it all together
- $16,999.52
- $5.66 a gallon
Meal sold per ton
2010 average price is $224.22 per ton.
On average 1562lbs of meal per ton pressed.
At 30 ton there is 23.50
$5270 or $1.76 a gallon.
- That brings the price down to $3.90
- Compare that to $3.70 for ruby diesel
Other things to consider

- British thermal units
- B100 had 130,000 Btu’s per gallon
- Petro base has 140,000 Btu’s per gallon
- 1.1 gallons of B100 to 1 gallon of diesel
- That more like saying $4.29 a gallon
Gelling Point

- B100 15.8 degrees
- #2 diesel 0 degrees
- #1 diesel -45 degrees
Conclusion

Due to the cost of the seed and other things like Btu’s and gelling point making your own biodiesel is not cost effective to buying diesel.

When to make biodiesel depends on the operation.


