On Farm Biodiesel Production

Borderview Farm
Alburgh, Vermont
Purchased Farm in 1983
First try at harvesting canola, 2005
We purchased this 1966 case combine $2400.00
Purchased a 4 ton per day Chinese oil press fall 2006
Cost $2600.00
Also purchased a Pellet Mill
Cost $950.00
Set up in converted cow barn
2007 build Biodiesel Building
Canola Seeds
Grain drill used to seed down canola 7 inch row spacing
Canola field in blossom
Canola ripe for harvest
Direct cut grain header
John Deer 1750 No till 4 Row Corn Planter

30 Inch Row Spacing
Combining mature sunflowers
Harvesting Sunflowers with a grain head doesn’t work very well
This also didn’t work
Finally something that really worked well
Unloading Sunflowers

60 ton Drying Bin
Clipper Cleaner Fan mill

Rotary seed cleaner
Dried suns  
One ton totes
Tote bags ready for pressing
Aerators used to dry sunflowers and to cool down pellets and meal
$250.00 each
Ag oil press 800 lbs of seed per day

$8500.00
Kern Kraft 40 twin screw – 1200 lbs of seed a day
$12,000.00
Gantry Crain's for hoisting tote bags
Oil-Biodiesel & Glycerin stored in 250 gallon totes
Two batch per day 50 Gallon BioPro 190 & T76 Dry Towers
$17,655.00
Methanol recovery system
$4500.00
Example: Low cost
40 Gallon Processor
$1400.00

Example: Low cost
450 Gallon Processor
$10,000.00
Each 250 gallon batch of oil is titrated for fatty acids etc. to get the reactant recipe right.
Methanol

Sodium Hydroxide or Potassium Hydroxide
Keep good records

Titration Tote #2

1) 2.0 KOH
2) 2.0 KOH
3) 2.0 KOH

New batch from new tote.

Then more records

2/6/2014
First titration: using NaOH - making a mini-batch
- using oil from 2012 harvest
- 8 mL doesn't seem right

2/11/14
- Got new methanol + tried titration again
  - 9.0 mL
  - 4.0 mL (51.1 High)
  - 5.5 mL
  - 4.5 mL
  - 4.5 mL
  - 4.5 mL
Mini batch of bio diesel is made from each 250 gallon tank
Sun Flower Meal
Corn and sunflower meal mix
Burning Sunflower pellets
Birds love sunflower seeds to
Normal mature sunflower head

Sunflower head with powdery mildew
Finished Biodiesel
Borderview Farm

Sunflower cost per acre to produce

No till plant: $9.00 per acre
Herbicide: $28.00 " (2 qt. Roundup)
Fertilizer: $48.00 " (200 # 10-20-20)
Seed: $28.00 " (28,000 Seed per acre)
Harvesting: $12.00 "

$124.00

Crop Yield: 1500 lbs per acre
Processing: $1.20 per gallon of oil (Methanol-lye-clean & dry.
Seed @38% oil = 73 gallons oil per acre
Meal: 930 lbs. X $.22 = $205.00 per acre ($450) T.

$1.69 a gallon to grow oil
$1.20 a gallon to process seed to fuel
$2.89 a gallon to produce fuel

Figure in Depreciation cost on facilities and equipment cost to get your true cost of Biodiesel Using the UVM Oilseed Crop Production Cost and Profit Calculator

Our cost for Biodiesel has been between $1.79 and $2.50 per gallon