

# UW-EXTENSION SMALL SCALE BIODIESEL PLANT PROJECT COST ANALYSIS

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Table 1. SMALL SCALE BIODIESEL PLANT CAPITAL INVESTMENT

ASSET	NOTES	INITIAL INVESTMENT
Press	Swedish Type 70	\$7,700
Furnace	Multi Fuel	\$6,410
Hp-100 Biodiesel Processor	Includes scale and testing equipment	\$10,500
Dry Wash Tower	Pump and biodiesel calculator	\$1,034
Building	20'x40' pole barn with concrete floor @ \$15/square foot	\$12,000
Building Modifications	Wiring, settling tanks, augers, bins, grain hoppers, etc	\$1,500
Other	Pumps and miscellaneous equipment	\$400
<b>TOTAL INVESTMENT</b>		<b>\$39,544</b>

**TABLE 2. PLANT OPERATING ASSUMPTIONS**

ISSUE	AMOUNT
Plant Operation Days/Year	182.5 Days
Canola or Sunflower Seed Biodiesel Production/Year	7,300 Gallons
Plant Labor Required/Year (1.25 Hours per 100 Gallons)	91.25 Hours
Gallons of Vegetable Oil Required/Year (1.07 Gallons of Vegetable Oil per Gallon of Biodiesel)	7,811 Gallons
Pounds of Vegetable Oil Required/Year (7.7 Pounds/Gallon of Vegetable Oil)	60,145 Pounds
Pounds of Canola or Sunflower Seeds Required/Year (40% Oil Yield)	150,708 Pounds
Tons Of Canola or Sunflower Meal Produced (1,370 Pounds of Meal/Ton of Canola or Sunflower Seeds Processed)	52 Tons

**TABLE 3. OILSEED CROP OPERATING ASSUMPTIONS**

ISSUE	AMOUNT
Canola Yield/Acre	2,000 Pounds
Canola Acres Required/Year (If Only Canola Is Used)	75.35 Acres
Total Cost To Produce The Canola Needed (If Only Canola Is Used @ a \$283.85 Production Cost/Acre. Includes \$85/acre land rent and an \$18.75/acre return to management. <sup>1</sup> )	\$21,388
Sunflower Seed Yield/Acre	2,500 Pounds
Sunflower Seed Acres Required/Year (If Only Sunflower Seeds Are Used)	60.28 Acres
Total Cost To Produce The Sunflower Seeds Needed (If Only Sunflower Seeds Are Used @ a \$434.30 Production Cost/Acre Includes \$85/acre land rent and an \$18.75/acre return to management. <sup>2</sup> )	\$26,120

<sup>1</sup> Actual 2008 production cost for a Buffalo County, WI on-farm canola test plot

<sup>2</sup> Actual 2008 production cost for a Buffalo County, WI on-farm sunflower seed test plot

TABLE 4. ESTIMATED 2008 COST TO PRODUCE CANOLA AND SUNFLOWER SEED BIODIESEL – NO METHANOL RECLAMATION

COST ITEM	CANOLA BIODIESEL (\$/YEAR)	CANOLA BIODIESEL (\$/GALLON)	SUNFLOWER SEED BIODIESEL (\$/YEAR)	SUNFLOWER SEED BIODIESEL (\$/GALLON)
Oilseed Production Cost	\$21,388	\$2.93	\$26,120	\$3.58
Methanol (No Reclamation)	\$1,022	\$0.14	\$1,022	\$0.14
Potassium Hydroxide	\$73	\$0.01	\$73	\$0.01
Oil (For Heat)	\$146	\$0.02	\$146	\$0.02
Dry Wash	\$73	\$0.01	\$73	\$0.01
Labor (\$15/Hour)	\$1,369	\$0.19	\$1,369	\$0.19
Repairs (Estimated @ 3 Percent of the Total Initial Investment)	\$1,186	\$0.16	\$1,186	\$0.16
Insurance and Misc. Overhead (Estimated @ 3 Percent of the Total Initial Investment)	\$1,186	\$0.33	\$1,186	\$0.33
Plant Equipment Depreciation (Economic Depreciation; 10 Year Useful Life)	\$2,754	\$0.38	\$2,754	\$0.38
Building Depreciation (Economic Depreciation; 20 Year Useful Life)	\$600	\$0.08	\$600	\$0.08
Opportunity Cost of Capital (10 Percent of the Total Initial Investment)	\$3,954	\$0.54	\$3,954	\$0.54
ESTIMATED 2008 BIODIESEL PRODUCTION COST	\$33,751	\$4.79	\$38,483	\$5.44
Credit for Value of Feed Produced <sup>1</sup>	\$11,076	\$1.52	\$9,464	\$1.30
ESTIMATED 2008 BIODIESEL PRODUCTION COST - Credit for Value of Feed Co-Produced	\$22,675	\$3.27	\$29,019	\$4.14

<sup>1</sup> The average of the Minneapolis canola meal and prices reported in the September 2008 issues of Feedstuffs were used to establish the value of the feed produced. **Canola Meal = \$213/ton.** **Sunflower Meal = \$182/ton.** The actual value can vary due to differences in quality.

TABLE 5. ESTIMATED 2008 COST TO PRODUCE CANOLA AND SUNFLOWER SEED BIODIESEL – 75 % METHANOL RECLAMATION

COST ITEM	CANOLA BIODIESEL (\$/YEAR)	CANOLA BIODIESEL (\$/GALLON)	SUNFLOWER SEED BIODIESEL (\$/YEAR)	SUNFLOWER SEED BIODIESEL (\$/GALLON)
Oilseed Production Cost	\$21,388	\$2.93	\$26,120	\$3.58
Methanol	\$256	\$0.04	\$256	\$0.04
Potassium Hydroxide	\$73	\$0.01	\$73	\$0.01
Oil (For Heat)	\$146	\$0.02	\$146	\$0.02
Dry Wash	\$73	\$0.01	\$73	\$0.01
Labor (\$15/Hour)	\$1,369	\$0.19	\$1,369	\$0.19
Repairs (Estimated @ 3 Percent of the Total Initial Investment)	\$1,186	\$0.16	\$1,186	\$0.16
Insurance and Misc. Overhead (Estimated @ 3 Percent of the Total Initial Investment)	\$1,186	\$0.33	\$1,186	\$0.33
Plant Equipment Depreciation (Economic Depreciation; 10 Year Useful Life)	\$2,754	\$0.38	\$2,754	\$0.38
Building Depreciation (Economic Depreciation; 20 Year Useful Life)	\$600	\$0.08	\$600	\$0.08
Opportunity Cost of Capital (10 Percent of the Total Initial Investment)	\$3,954	\$0.54	\$3,954	\$0.54
ESTIMATED 2008 BIODIESEL PRODUCTION COST	\$32,985	\$4.69	\$37,717	\$5.34
Credit for Value of Feed Produced <sup>1</sup>	\$11,076	\$1.52	\$9,464	\$1.30
ESTIMATED 2008 BIODIESEL PRODUCTION COST - Credit for Value of Feed Co-Produced	\$21,909	\$3.17	\$28,253	\$4.04

<sup>1</sup> The average of the Minneapolis canola meal and prices reported in the September 2008 issues of Feedstuffs were used to establish the value of the feed produced. **Canola Meal = \$213/ton.** **Sunflower Meal = \$182/ton.** The actual value can vary due to differences in quality.