energrow

Energrow System Payback Analysis

Where do I break-even?

To see how the Energrow system could be the solution for your fuel and energy needs, you need to complete a break-even analysis. Refer to the back of this sheet for data and assumptions used in this case study.

This chart illustrates a break-even estimate based on the average Ontario dairy farm size with an implemented Energrow system. By being able to integrate both the oil and meal products of the Energrow system in the dairy operation, the system would pay for itself in just over 4 years.

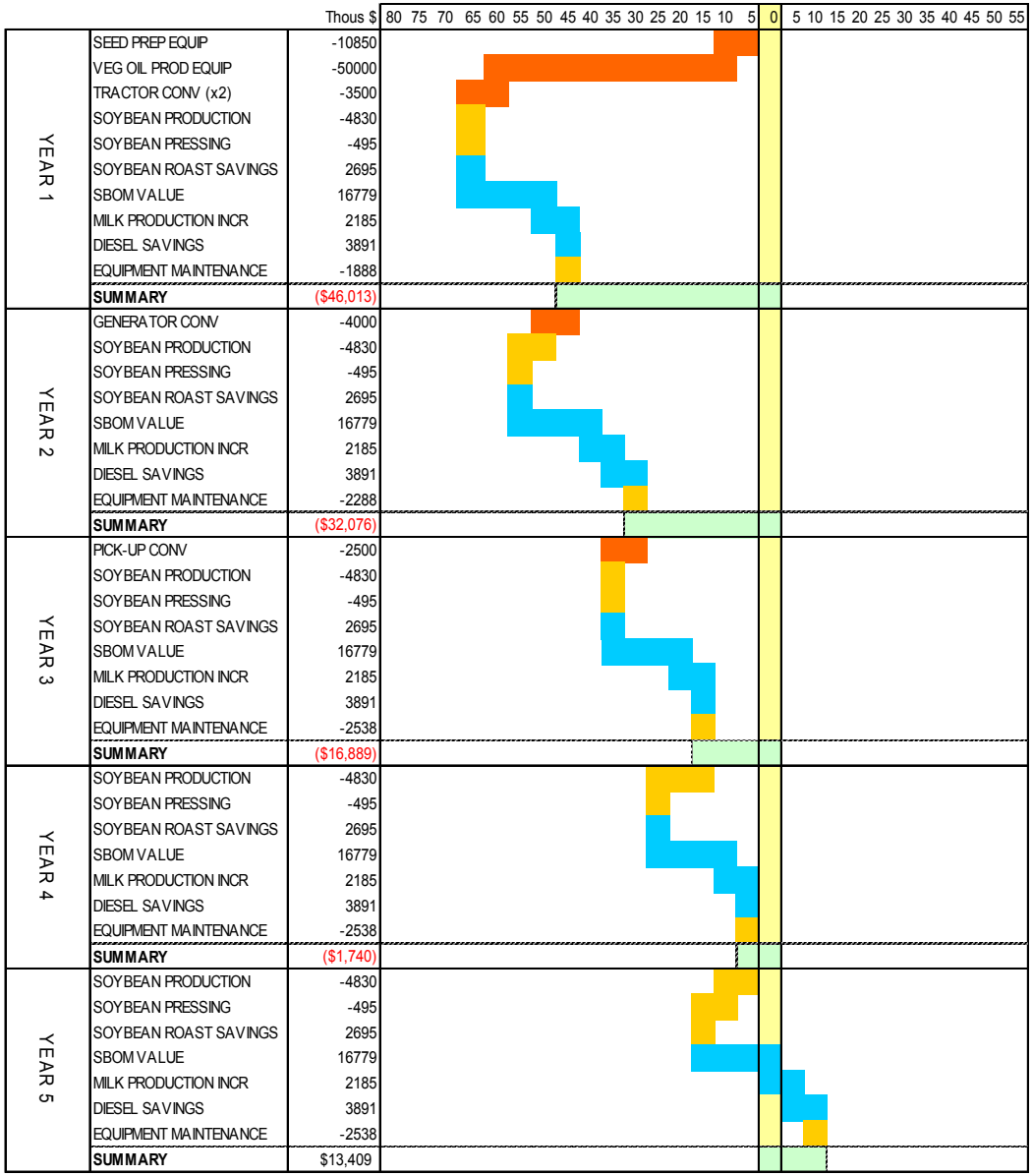
SBOM: Soybean Oil Meal (Expeller-pressed)
SESBM: Industrial Solvent-Extracted Soybean Meal
SVO: Straight Vegetable Oil

Dairy Farm:

Location	Ontario	
Size:	250 acres:	125 acres corn 75 acres hay/grass 50 acres soybeans (40 bu/acre = **55T** raw soybeans)
Dairy:	150 cows:	60 later lactating 45 early lactating 45 dry lactating
Average Diesel Expenses:		$10,000 CAD (per year)

Case Study: 250 Acre Farm w/150 Cows, 50 Acres Soybeans

		Thous $
YEAR 1	SEED PREP EQUIP	-10850
	VEG OIL PROD EQUIP	-50000
	TRACTOR CONV (x2)	-3500
	SOYBEAN PRODUCTION	-4830
	SOYBEAN PRESSING	-495
	SOYBEAN ROAST SAVINGS	2695
	SBOM VALUE	16779
	MILK PRODUCTION INCR	2185
	DIESEL SAVINGS	3891
	EQUIPMENT MAINTENANCE	-1888
	SUMMARY	($46,013)
YEAR 2	GENERATOR CONV	-4000
	SOYBEAN PRODUCTION	-4830
	SOYBEAN PRESSING	-495
	SOYBEAN ROAST SAVINGS	2695
	SBOM VALUE	16779
	MILK PRODUCTION INCR	2185
	DIESEL SAVINGS	3891
	EQUIPMENT MAINTENANCE	-2288
	SUMMARY	($32,076)
YEAR 3	PICK-UP CONV	-2500
	SOYBEAN PRODUCTION	-4830
	SOYBEAN PRESSING	-495
	SOYBEAN ROAST SAVINGS	2695
	SBOM VALUE	16779
	MILK PRODUCTION INCR	2185
	DIESEL SAVINGS	3891
	EQUIPMENT MAINTENANCE	-2538
	SUMMARY	($16,889)
YEAR 4	SOYBEAN PRODUCTION	-4830
	SOYBEAN PRESSING	-495
	SOYBEAN ROAST SAVINGS	2695
	SBOM VALUE	16779
	MILK PRODUCTION INCR	2185
	DIESEL SAVINGS	3891
	EQUIPMENT MAINTENANCE	-2538
	SUMMARY	($1,740)
YEAR 5	SOYBEAN PRODUCTION	-4830
	SOYBEAN PRESSING	-495
	SOYBEAN ROAST SAVINGS	2695
	SBOM VALUE	16779
	MILK PRODUCTION INCR	2185
	DIESEL SAVINGS	3891
	EQUIPMENT MAINTENANCE	-2538
	SUMMARY	$13,409



Break-even Facts and Guidelines[1]

Capital/Production Costs:

Energrow System		$50,000 Fully Custom Small-Scale System - Cost Estimation incl. hopper, press, sedimentation tanks, and filtration system
Repair and Maintenance Costs of Energrow System		$1528/yr Energrow system depreciation is based on a ten year life cycle with a 180MT/year processing capability Estimated installation expense of $50,000 yields a depreciated cost/tonne of $27.78/MT
Seed Cleaning/Preparation Equipment		$10,850 Small Seed Cleaner $4000 Hammer Mill $3500 Auger Motor $2500 Auger $850
System Production/ Electrical Running Costs		$495/yr Seed Preparation/Pressing $330/yr ($3/day) Filtration: $165/yr ($0.03/L)
Diesel Conversions	4 conversions[2]:	Year 1: 2 tractors $3500.00 Year 2: generator $4000.00 Year 3: pick-up truck $2500.00
Repair and Maintenance Costs of Converted Vehicles		10% of Purchase Price/yr Year 1: $350 maintenance/yr Year 2: $750 maintenance/yr Year 3: $1000 maintenance/yr
Soybean Production		$4830/yr: $96.65/acre (includes total inputs, excludes overhead costs such as machinery, tillage, planting, insurance etc.)
Nutritionist Consultation/Vitamin and Mineral Supplementation		Depends on nutrition knowledge of the purchaser and his specific needs

System Yields[3]:

	per hour (average press capacity)	**per day** (12 hr daily run-time)	**per year** (110 days at 12 hr daily run-time)
Raw Soybeans Processed	40kg	500 kg	**55 T**
Soybean Meal Produced	34kg	425 kg	47 T
Soybean Oil Produced	4 L	50 L	5500 L

Savings/Income:

SBOM Value:	$16779/yr SBOM worth: 357$/T[4]	
Diesel Replacement[5]:	$3891/yr (39% of diesel replaced with SVO (Power density: SVO equivalent to 5188L of diesel)) *Rape seed oil has an energy content 6% below that of diesel on a volume basis (similar to biodiesel). Indications are that the energy efficiency is similar. Claims that the combustion characteristics should be better due to higher oxygen content in fuel leading to a more efficient combustion makes sense in theory. However, no scientific verification has yet been found.*	
Replace External Roasting Costs:	$2695/yr for 55 T of soybeans at $49/T roasting:	$37/T for roasting $2/T storage and shrinkage $10/T transportation
Increased Milk Production:	$2185/yr (100mL/cow/day extra with addition of SBOM into ration, replacing solvent extracted soybean meal)[6] *Studies show that replacement of SESBM with SBOM has little effect on intake, but an increased milk production of 3%. In this case, income from a 3% increase in milk production would actually produce an income of $17,000!*	

Potential Income from Sale of Excess Meal or Custom Pressing!

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[1] Please note, pricing of system and conversion kits vary due to type, use and implementation. The savings and costs shown here reflect those of this specific case study and do not necessarily reflect the specific needs and varied uses of other farming operations. This is made available as a guide only.

[2] All conversions assumed to be one to two-tank conversions to maximize oil use for fuel

[3] outputs vary based on press temperature and speed as well as the seed type and quality

[4] Based on 10-yr average soybean price (1995-2004) of $307/T. (SBOM 12% more feed energy than SESBM) results in $20 more for SESBM and $50 more for SBOM on price of raw soybeans.

[5] Assumed diesel cost of $0.75/L

[6] Average milk output per cow estimated to be 26L/day, milking of 105 cows 2 times per day and a milk price of $0.57/L