Mitigating the Fuel and Feed Effect of Increased Ethanol Production Utilizing Sugarcane

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AFPC

Outline

- Background
- Objective
- Materials and Methods
- Results
- Summary and Conclusions

Background

- Ethanol production increased the last few years
- Corn is the primary feedstock
- Corn prices near doubling since late 2006
- 20% of US corn goes to ethanol
- Food vs. Fuel vs. Feed debate starting to gain attention

Background

- Brazil is the biggest producer of sugarcane based ethanol
- Energy output to input from cane ethanol 8:1 compared to 1.3:1 from grain based ethanol
- One disadvantage is that ethanol can only be produced during cane harvesting

Objective

- To evaluate the economic feasibility of using a non-feed crop such as sugarcane in ethanol production

Materials and Methods

- 100 mil gallon nameplate so 105 mil gallons sold
  - 1st dual feedstock plant we are aware of
  - Approx 6 mo of year grind cane and 6 mo of year use dry mill process with grain
  - Plant buys and owns all harvesting equipment
  - Plant loans growers initial start-up costs for 3 years to be paid back from Yrs 1-3
  - Feedstocks
    - Sugarcane
    - Grain sorghum (could use corn if wanted to)

Materials and Methods

- Goal of 50 mil gallons from sugarcane requires:
  - 85,000 acres of sugarcane
    - Initial establishment cost $650/acre
    - Annual production costs $350/acre
    - Average yield 28 tons (lower than valley but approx the same as Louisiana)
    - Producers receive $17/ton for cane and have $0 harvesting costs
  - If sugarcane production is short – will maintain 100 mil gallon production with grain
    - Depends on fiscal year

Materials and Methods

- Plant and equipment would be financed:
  - 50% equity – return 15%/year dividends
  - 50% debt at 9% over 10 years
- Total Investment Costs - $276 mil
  - $196 mil plant
  - $10 mil vinasse handling
  - $13.2 mil (20 harvestors, 50 tractors, 20 buggies, and 60 semi trucks w/ trailers, 15 pickups, 2 suburbans)
  - $1.7 mil (office and shop equipment)
  - $55.3 mil (cane establishment)

Results

	Sugarcane	Sorghum
Feedstock	**0.91**	**1.41**
Processing	**0.72**	**0.54**
Less DDG Credit		**-0.22**
Total Cash Cost	**1.63**	**1.73**
Depreciation	**0.29**	**0.15**
Total Cost	**1.92**	**1.88**

Results

Statistical Summary of Net Present Value

Mean	78,691,279
StDev	38,441,453
Min	-60,028,338
Max	198,694,766

Probability of Success

P(NPV>0)	97.46%

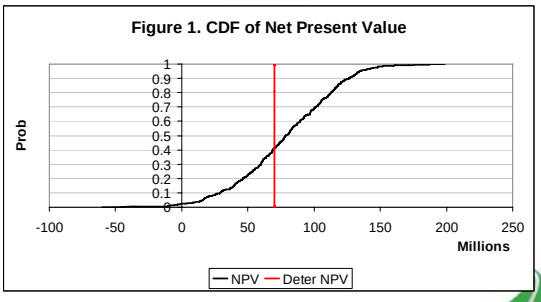
Deterministic NPV Values

D.NPV	70,029,520

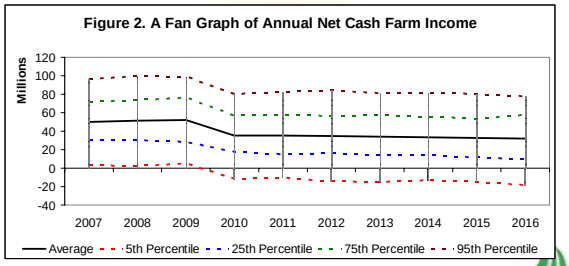
Probability NPV Exceeds Deterministic NPV

P(NPV>D.NPV)	58.84%

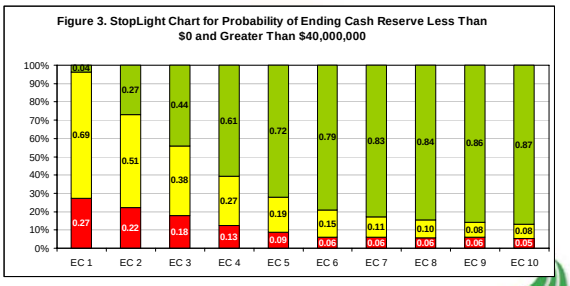
Results



Results



Results



Summary and Conclusions

- Sugarcane seems to be a viable feedstock alternative for ethanol production in the U.S.
- For year-round production use cane and grain
- Energy output to input ratio for cane ethanol much better than grain ethanol

Questions?

Thank You!

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