

Sustainable engineering: green sustainable materials

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12 billion gallons per year of biodiesel can be produced by employing 0.25 billion acres of land is required.

The U. S, gasoline consumption is about 133 billion gallons. In order to fulfill the required amount with 1/3 of ethanol from corn, will be 43.3 billion gallons. 1 acre of cornfield produces about 77.5 gallons of ethanol. 0.55 billion acres will meet the 1/3 demand for gasoline.

Emission produced by corn ethanol per BTUs of energy is about 42Kg /BTU, where 42 KG represents the greenhouse gas emission in kilograms. Oxides of nitrogen and carbon are a major component of GHG emission. Emission produced by sugarcane ethanol per BTUs of energy is about 37Kg /BTU. Emission produced by switchgrass ethanol per BTUs of energy is about 29Kg /BTU. Emission produced by soya bean diesel per BTUs of energy is about 32Kg /BTU.

The payback period is the period of time at which the plant costs can be recovered and there refining and processing plants start making the profit.