

BIOFUELS & BIOENERGY

and

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Biofuel & Bioenergy in the energy mix

A part from Solar, wind and other renewables bioenergy is best suited to our country in view of vast waste land and huge manpower hitherto ethanol is produced from sugar cane and corn. But there is a debate "Food Vs Fuel" and there is the need to find alternatives. The former US president Barack Obama has reduced subsidies on ethanol from sugarcane and corn. The alternative is biofuel from carefree growth, regenerative CAM plant like sisal agave and tequila. Being CAM plant it will act as "CARBON SINK". Agave is a versatile plant well suited for millions of hectares of wastelands in India. Agave-derived renewable fuels, products and chemicals biofuels ethanol (1st and 2nd generations), biobutanol, biomethanol, biojet fuel, green gasoline, biooil, biocrude, biodiesel, biocoal, biochar, H₂, syngas, biogas, torrefied pellets and briquettes, drop-in fuels, pyrolysis oil, and biochar. Bioproducts Agave syrup (kosher), Powder inulin, healthy sweeteners, fat substitute (ice cream), bioplastics, cellulose, paper, acids, CO, CO₂, biopolymers, pressed boards, geotextiles, fibres, phenols, adhesives, wax, antifreeze, film (food wrap), fertilisers, insulating foam and panes, gel, pectin, non woven material (disposable diapers), mouldings, concrete additive, food additives, composite materials, esters, substitute for asbestos, in fiberglass, hydrocarbons, petrochemical precursors, activated coal, secondary metabolites, detergent, glycols, furfurans, resins, polyurethanes, epoxy, aromatics, olefins, paints and lubricants. Green electricity Pellets and briquettes, syngas, biooil, biocoal, biogas, biochar, H₂ cells, ammonia and pyrolysis oil. CO₂ Sequestering in the soil Biochar. Agave: Competitive Advantages 1. Uses marginal dry-land (41% of the Earth's surface). 2. Most Efficient use of soil, water and light. 3. Massive production. Year-round harvesting. 4. Very high yields. Very low inputs. 5. Lowest cost of production among energy crops. 6. Not a commodity, so prices are not volatile. 7. Very versatile: biofuels, bioproducts, chemicals. 8. 100 M tonnes established in the 5 continents 9. Enhanced varieties are ready. Mexico is pioneer in utilising every part of Agave for commercial exploitation. Will India follow? Ours is an agrarian economy. Let us utilise our resources fully so that there will be more rural employment and climate change abatement by providing CAM plants. Agave as Aviation Fuel: AusAgave has spent the last ten years developing intellectual property on the drought resistant agave genus by embracing plant propagation, agronomy, cropping, and harvesting techniques which result in "plantations affording at least a 50 percent yield per acre improvement over historic sugarcane productivity," according to the firm. "The results of our recent harvesting program have already proven our efforts to substantially increase sugar yields and decrease delivered sugar costs for select agave species, and we fully expect to continue decreasing sugar costs over the next few years," states Chambers. Why Agave? How about ethanol yields of 10,000 liters per hectare (1070 gallons per acre, per year)? That's a start. According to Byogy, AusAgave's recent harvest results already demonstrate the production of low cost sugars allowing Byogy's technology "to produce cost competitive gasoline, jet fuel, diesel, and a suite of chemicals at or below that of petroleum products without infrastructure modification, blending, or government subsidies." (Tequila Sunrise: Companies Sign Pact to Advance Agave as Aviation Biofuels Feedstock, Renewable Energy World, June 18, 2014, By Jim Lane, CEO).

Notes: Biography

Anumakonda Jagadeesh holds a Ph.D from prestigious University of Roorkee (Now IITR), India. He published over 150 Research Papers in International Journals and over 50 Research papers submitted at International Conferences. He is the recipient of several awards including the prestigious Margaret Noble Foundation Seattle, USA Award in Energy Technology.

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