animal and municipal wastes. Much of the waste is lignocellulosic material that can be converted[2] into biofuels. The two most common transport biofuels are ethanol and biodiesel. They are considered to be ecofriendly and can be used as substitutes for gasoline and diesel, or are blended with them in order to reduce greenhouse gas emission, thus helping communities improve air and water quality by reducing toxins. Development of recombinant strains[3] to enhance the yield of ethanol in a short span has also received considerable attention. The fossil energy balance[4] of biodiesel (3.2) indicates that for every unit of energy used for producing biodiesel, over three units are available to do useful work. In contrast, the consumption of one unit of fossil fuel energy produces just 0.83 units of useful energy from petroleum diesel.

India should focus on the conversion of biomass into fuel, which is an attractive alternative to face the emerging challenges. The Government of India has approved[5] the controlled cultivation of *Jatropha curcas*, *Pongamia pinnata*, *Calophyllum inophyllum*, *Euphorbia tirucalli* and *Boswellia ovalifololata* for biodiesel production. *J. curcas* is the popular biodiesel-yielding source. It is estimated[5] that about 3 million hectares of plantation is required to produce oil for 10% replacement of conventional diesel. Further, one acre of *Jatropha* plantation could produce oil sufficient to meet the energy requirement of a famly of five. The residue oil cake, after extraction of oil, can be used as organic fertilizer. Moreover, *Jatropha* can be grown in any wasteland with less irrigation and hence can be an important feedstock under Indian conditions. In recent years, trials on automobiles using biodiesel have been conducted by institutes like IOC, ICAR, IIT-Delhi, which have confirmed that biodiesel can reduce wear and tear of engines and reduce oil pollution significantly.

The use of biofuels will preserve the environment, boost the economy and maintain energy and homeland security. Research should focus on improving technology for production of biofuels, which will decrease costs and increase the kind of biomass that can be converted into biofuel. Today's farmers can be part of tomorrow's solution and can grow the energy that will 'fuel our future'.

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Frequency of sister chromatid exchanges in diabetic patients

Sheth *et al.*[1] report increased frequencies of sister chromatid exchanges (SCEs) in patients with type II diabetes, results which are interesting. But from the way the results are presented it is difficult to judge whether their conclusions are valid. The figures presented show very high frequency of SCEs (21) in a lymphocyte from a diabetes case and 7 SCEs in a control case. The authors have pooled all the data of 20 diabetic cases together which do not give an idea about the extent of variability within the group of patients. It is important to know whether all the patients had high frequencies of SCEs or only a small proportion of them. It will be useful to present individual values in a histogram for the patients and controls which will reflect the extent of variations observed. For SCE studies in human populations it is recommended to score at least 40 or 80 cells per individual depending on the extent of difference observed between the controls and the patients and apply appropriate statistical analysis[2]. The authors did not specify how many cells were scored for the presence of chromosomal aberrations. If they had confined this analysis to only 25 second division metaphases, then they would fail to observe any aberrations, because the frequencies of aberrations are usually very low (1–3/1000 lymphocytes) unless there was a history of exposure to radiation or chemotherapy. To detect spontaneously occurring chromosomal aberrations at least 100 cells per individual have to be scored. There are some discrepancies in the paper. Under table 2, the P value given is < 0.001, whereas P values in the abstract and text should be < 0.0001. In table 2, the fourth column should be no. of SCEs/metaphase (not no. of metaphases). I guess the BrdU concentration used is 10 µg/ml and not 10 µl/ml.

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