

**GOVERNMENT OF INDIA
AGRICULTURE
LOK SABHA**

UNSTARRED QUESTION NO:399
ANSWERED ON:06.08.2013
RESEARCH ON ETHANOL
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Will the Minister of AGRICULTURE be pleased to state:

- (a) whether the Government proposes to conduct an intensive research in the field of sugarcane production in view of having the maximum production of ethanol from sugarcane so as to use it in place of petroleum and diesel;
- (b) if so, the details thereof; and
- (c) if not, the reasons therefor?

Answer

THE MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE AND FOOD PROCESSING INDUSTRIES (SHRI TARIQ ANWAR)

(a) & (b): Indian Institute of Sugarcane Research (IISR), Lucknow, Sugarcane Breeding Institute (SBI), Coimbatore and All India Coordinated Research Project on Sugarcane under the Indian Council of Agricultural Research (ICAR) carry out basic and applied aspects of research in improving sugarcane productivity. Through ICAR studies, microbial and chemical processes have been developed for generating fermentable sugars from sugarcane biomass. Biological method for converting sugarcane trash into fermentable sugars using eight bioagents have been developed. Cellulolytic fungi *Aspergillus terreus*, *Cellulomonas uda* and *Trichoderma reesei* and *Bacillus macerans* have been identified for efficient conversion of sugarcane biomass to fermentable sugars for alcohol production. Dilute sulfuric acid pretreatment method for converting sugarcane biomass into fermentable sugars has been developed and its further saccharification has yielded 45 - 50 % of fermentable sugars. Simultaneous saccharification and fermentation (SSF) process for ethanol production from pretreated sugarcane biomass has also been developed. Sugarcane varieties with high juice volume and high total sugars are suitable for the purpose of yield of alcohol which ranged from 75 to 125 litres per tonne of cane. Improved sugarcane clones Co 98013, Co 99012, Co 99006 and CoJ 94-8 have been identified. Studies on management of sugarcane for ethanol production showed that application of 280 kg N per hectare in three splits at 45, 90 and 135 days after planting gave higher biomass and ethanol yield.

(c) Not applicable.