Non-polluting diesel substitute from coconut oil

Depleting supply of petroleum fuels has made it imperative to explore alternative sources. In Malaysia Palm oil has been tested as petroleum substitute for running buses. In other reports, vegetable oils such as coconut oil, soybean, sunflower, peanut and linseed have been tried for diesel substitution. Recently, studies have been made to convert vegetable oil to other forms through esterification. Commercial production of coconut methyl ester (CME) was done for more than a decade ago. Methyl ester is produced by the reaction of coconut fatty acids and methanol using sodium hydroxide as catalyst, plus heat to speed up the reaction process. In this process, glycerine is obtained as a by-product. In Philippines, Carandang and his co-workers performed a road test with CME as 100% fuel for running an Asian Utility Vehicle equipped with an ISUZUC-240 diesel engine for 25,000 Km. Results showed that in terms of fuel consumption index, diesel is superior only by 15% due to the lower heating value of CME. In terms of full combustion, CME burns more efficiently than diesel. CME is more environment- friendly as this emits less carbon monoxide.

The authors have concluded that CME can be used as an alternative fuel for diesel engines. In terms of economics, production of methyl ester is feasible in areas where the price of copra is cheaper and diesel is expensive. Also the advantages of commercializing CME as diesel substitute include a guaranteed continuous supply of alternative fuel for diesel and coconut growers shall get benefits through regular sales at a good price. At the time of shifting gear or starting the engine, CME gives off white smoke while diesel emits heavy black smoke [Carandang *et al, Indian Coconut J*, 2001, **31**(11), 15]

Produce more Chicory for blended coffee and quickly too

In India chicory is cultivated in many places and about 50 tonnes of chicory is produced every year. After processing powdered roots are blended with coffee to produce French Coffee(65% coffee and 35% chicory). It increases volume of coffee and improves flavour and keeping quality of coffee powder. The yield of chicory is not sufficient for its various uses in medicine, cosmetics and coffee blend. The supply of such an important crop can only be increased by its large scale cultivation and production. In present day scenario hopes are lying in genetic engineering of crops. This crop is amenable to genetic manipulation. On Lucknow Local cultivar, experiment conducted at CFTRI, Mysore , led to floral induction in chicory plants. The plants which otherwise flower biennially can be induced to flower precociously for studies on *in vitro* pollination and seed development.

Hairy roots have been obtained within 10 days of inoculation of root–inducing (Ri) plasmids of ***Agrobacterium rhizogenes*** to wounded hypocotyls of 2-10-day-old seedlings of ***Cichorium intybus*** **Linn.** Early flowering of these plants was obtained by inserting of Ri-I-DNA. The MS medium containing BAP (6-benzylaminopurine) (4 mgl^{-1}) with NAA (α-napthaleneacetic acid) (1.0 mgl^{-1}) gave best result. Thus in future this approach would enhance production and economic benefits of blended coffee (Bais *et al, Curr Sci*, 2001, **80**, 83).