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IDENTIFICATION OF MEANS BY WHICH THE COMPETITIVENESS OF NATURAL PRODUCTS WITH ENVIRONMENTAL ADVANTAGES COULD BE IMPROVED

Reducing the environmental stress of consumption without affecting consumer satisfaction

Report by the UNCTAD secretariat

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Box 1: Alternative technologies for biomass fuel use and production

Several new technologies have been developed that can make bioethanol derived from sugar cane (or other feedstocks) more competitive.

Aquahol

The "aquahol" technology was originally developed by Rolls-Royce and T.R.W. It concerns a 50:50 ethanol blend of water. Unlike the current "gasohol" blend of ethanol with gasoline that will be mandatory in the United States starting in 1995, the 50% water/alcohol mixture is injected into the conventional engine rather than blended into the gasoline. This process has been recommended by the United States. Department of Agriculture as being 800% more efficient than gasohol. Other benefits include longer engine life, fewer tune-ups and lower requirements for high octane gasoline.

With regard to environmental benefits, this alternative is claimed to produce less NOx and aldehyde. Other significant benefits of aquahol are the oxygen and hydrogen emission benefits. By molecular weight, water has about 89% oxygen versus most gasoline chemical additives which have only about 6%. Since it is now mandated that all gasoline in America be oxygenated, water could eliminate all chemicals including the current methyl tertio-butyl ether (MTBE) additives.

Splitting of sugar cane

Compared to the conventional processing of sugar cane by milling or crushing, the splitting of sugar cane has some advantages. First, this new technology, developed in Canada during the early seventies, requires less energy than crushing or milling. Second, the splitting process produces a valuable by-product named "cane-rind" instead of the crushed or milled bagasse. Since the rind is not crushed, it can be used to make a strong fibre board that appears to have structural advantages compared to conventional chipboard made from wood chips. It is also simple to rinse the sugar or sucrose residue, thereby eliminating fermentation. The process also provides an alternative source of paper pulp or any of the numerous products now produced from the cutting of trees.

New varieties of sugar cane and sweet sorghum

The ethanol part of the "aquahol" blend can be based on biomass crops (sugar cane and sweet sorghum) originating in developing countries. New varieties of plants now seem to be available that grow all the year round with lower water requirements and less susceptibility to diseases than current crops. The minimal water requirements are especially important in countries that have droughts. The year-round aspect is also very important for developing countries, since many rural agricultural areas are losing their residents to large cities because of the lack of the year-round employment and lower earnings.