

Protein for the Millions

Scientists who have been experimenting with obtaining food from unconventional sources may have found one solution to the problem of protein deficiency in developing countries in "Leaf Protein Concentrate" (LPC). These results could well be used in the rural areas in Sri Lanka, specially by such organisations as the District Development Councils.

Experiments have revealed that green leaves, which are found in abundance in most parts of the world, could be processed to provide this highly nutritious human food. Any leaves of leguminous plants such as alfalfa, clover, peas, ground-nuts, beans etc., cereals like sorghum, maize, millet, grasses or vegetables, aquatic weeds and other agricultural waste products could be used to obtain Leaf Protein Concentrate.

The process of protein extraction is a simple one and lends itself ideally to cottage industry. Machines for this purpose have been developed in Britain, U.S.A. and Hungary and Nigerians have adopted the "Posho" mill (see illustration) used in villages for grinding corn and beans. It has been found that the hammer mill and press gives the maximum protein from leaves. Experiments have revealed that green leaves processed mechanically with small scale technology is capable of producing a yield of over 2000 lbs of crude protein per acre. This compares with 700 lbs for soya beans and 175 lbs for rice.

To extract the protein, the leaves are first pulped to disintegrate the tissues (the more cell walls are ruptured the greater the protein yield) and then pressed for juice using some kind of press. This juice contains most of the protein. The extracted leaf juice is then heated at a temperature of 70-75°C or the pH factor is adjusted to about 40 to coagulate the protein. This is then separated and dried to give Leaf Protein Concentrate. To obtain the maximum protein content the residue is repulped and processed again. To make Leaf Protein Concentrate more appetising the coagulation is

washed and pressed to remove some of the non-protein solids, and dried to a green powder.

In addition to a high N content Leaf Protein Concentrate contains more lysine than the best grades of corn, more methionine than soya-bean and an amino acid pattern similar to that of high quality protein. It also has 3-8% fatty acids and B-carotene, vitamin B₂, xanthophyll and iron.

Leaf Protein Concentrate is an effective treatment for Kwashiorkor and experiments have proved that it could be cured by the regular use of LPC for 5 weeks. Tests have shown that used as a condiment LPC supplemented foods were acceptable to everyone.

Another Competitor for Natural Rubber

It has been reported that an Austrian Company specialising in polyurethane technology has been successful in making plastic tyres. These plastic tyres are considered to be longer lasting than the tyres made of natural rubber and the producers claim that even when deflated the tyres retain their original shape.

The plastic tyres which are produced using polyurethane having a high elasticity and a high tensile strength, weighs about 2/3 that of an ordinary tyre and its cohesive quality reduces possibilities of skidding. Large scale production is capable of achieving a considerable reduction in costs as well.

Because of its longer lasting qualities, lightness, and tendency to reduce motor accidents and low costs it is expected that the large scale production of plastic tyres will pose a threat to rubber tyres as well as to natural rubber.

Improving Mud Houses

A method of reinforcing wattle and daub houses has been introduced in the Kwango area of Zaire in Africa. This method is considered suitable for adapting in similar areas of Africa, South America and Asia. It is designed to make existing mud houses semi-permanent in areas where the price of cement, poor transport facilities etc. make more expensive methods impracticable. Whereas the average life of a mud house is only five years, the first houses on which this method was used are still standing after 17 years. The method involves strengthening the base of the outer walls



The "Posho" mill as used in villages for grinding corn and beans.

(which is the first thing to deteriorate in the wattle and daub houses) and adding a coat of plaster to the walls. It takes about three weeks for an average house 8m x 5m to be built.

Manioc Biscuits

Biscuits made from Cassava (Manioc) flour are being marketed by a manufacturer in Mauritius. These biscuits are available in four flavours — milk, butter, coconut and chocolate. They are reported to have been manufactured since 1870 by a family concern using home-grown cassava and are now sold under the name *Biscuits de Manioc, Mauritius*.

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