

The economics of meat and milk production are almost wholly dependent on the availability or otherwise of inexpensive feedstuffs.

The availability and consumption of live-stock products in any area is linked closely with the rate of progress in improving living standards. Increases in meat and milk output are predicated on increases of indigenous stockfoods, or upon increased imports of such materials.

In achieving higher standards of living, we can thus appreciate the importance of readily obtainable and cheap feeds.

The difficulty since the war in securing concentrates has led to greater emphasis on indigenous production. It is felt that if bagasse, molasses and urea could satisfactorily be used in the feeding of cattle, a colossal step towards the goal of better conditions in the West Indies would be taken.

Furthermore, larger quantities of meat and milk at lower prices may one day become a reality in Europe, through the aid of urea.

Concentrate cattle foods derive very largely from "Dollar Sources", and the burden upon "Sterling Reserves" would be significantly lessened, if imports of such materials into British Territories could be reduced.

Furthermore, in these days of high freight charges, whether carriage is effected by sea, rail, road or air, it would seem obvious that untold monetary

∟ advantage -

advantage would accrue from the use of alternative feeding practices, such as the one cited in this text.

New methods of steam economy are being introduced, and these are leading to greater quantities of unwanted bagasse. The demand for molasses is rapidly becoming saturated. In fact, surpluses of bagasse and molasses are liable quite soon to be a serious embarrassment to the sugar factories, and further uses for these by-products are being sought.

How sad it would be, in view of world food shortage, to return to the practices of pre-war days, to pour molasses down the factory drains, to fire bagasse purely as a means of disposal, and to thus waste potential stock feed. However, if outlets for such by-products cannot be found, what alternative have we before us?

The outlook is not so bleak as it may at first appear. Bagasse contains 25% of Pentosans, and is likely to be used in greater degree for the production of furfuraldehyde, particularly in view of the findings of modern research on its chemical behaviour.

In addition, bagasse contains about 50% of cellulose, and can be used in the manufacture of paper pulp, insulating board and the like.

Again, by means of chemical predigestion and fermentation with *Torula utilis*, bagasse would yield 1/7th its weight of yeast.

Molasses is produced at the rate of about 50 gallons per ton of raw sugar. It contains Aconitic Acid, and is proving of interest in the field of plastics. Having a high proportion of salts, including some 5% of Potash, it is sometimes used as a fertiliser. The demand for conversion into rum is rapidly being met.

∟ Molasses -

Molasses contains appreciable quantities of the B group Vitamins, particularly Nicotenic Acid and Pantothenic Acid, thus enhancing its nutritional value.

Notwithstanding these possible uses for bagasse and molasses, direct utilisation by cattle, as a means of disposal, would ^{far} outweigh in value any of the industrial demands.

Given the necessary plant and transport facilities, supplies of urea should present no problems. Calcium cyanamide is treated with acid and water to yield urea in a German process. Further, a direct synthetic process involving a reaction between liquefied carbon dioxide and liquid Ammonia also gives urea.

These modes of urea production, together with the others in existence, indicate that shortage is in no way likely to be caused on account of the unavailability of raw materials.

The living processes for the conversion of this inorganic nitrogen into protein are supplied by the ruminant itself.

The Experimental Ration was fed at the following levels in the 1959 trials:-

- 25%
- 33%
- 50%

In the 1953 trial it was fed at the following levels:-

- 25%
- 50%
- 60%