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## SUGGESTED STRATEGIES FOR REDUCING THE DEPENDENCE OF LIVESTOCK INDUSTRIES ON COCONUT POONAC AS A FEED CONCENTRATE

EARLE C. DE SILVA\*

*Ministry of Planning and Economic affairs, Colombo, Sri Lanka*  
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### ABSTRACT

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In the past a high percentage of coconut poonac has been used in Sri Lanka for livestock feeding. This is because it was cheap and convenient. From the 1970's onwards there has been a severe scarcity of coconut poonac. The solution to the coconut poonac shortage is not to ban the export of copra or desiccated coconut but to programme immediately for substitutes and to get over the total dependence on it.

### INTRODUCTION.

The shortage of coconut oil and poonac and price increases to consumers have become a recurring annual phenomenon. These have too often been dealt with on the basis of pressures for temporary solutions, satisfying the demands of a group of intermediaries or consumers. It has had serious effects on the economy and on some manufacturing sections of the industry. The economics of livestock production with ruminant animals is fundamentally based on forage and not concentrate feeds like poonac (De Silva, 1976.b).

All countries well advanced in dairying such as New Zealand, Australia, Canada, the United States of America and all countries in Europe have based milk production on improved pasture. Of these, New Zealand's exportable milk surplus is entirely off pasture. The entire dairy industry in New Zealand and much of it in Australia and in Europe which together produce 70% of the world's milk production are based on grass plus legumes and very small quantities of concentrates. New Zealand depends entirely on legume mixed pasture. More than 95% of the world's milk production and a very high percentage of other livestock production use no coconut poonac at all.

In Sri Lanka a high percentage of coconut poonac has been used for livestock feeding. The largest quantity of coconut poonac is used to feed dairy cattle. In the case of poultry feed mixes, usually not more than 25 per cent of the ingredients consists of coconut poonac.

\* Present Address: 21, Cambridge Terrace, Colombo 7.

Many farmers in Sri Lanka use coconut poonac only as a straight concentrate feed. The state managed British Ceylon Corporation (BCC) has been the largest purveyor of coconut poonac for dairy cattle with its special brand names such as "Tralac" and "Morlac Plus."

The high level of use of coconut poonac for livestock feeding in Sri Lanka has been purely incidental to its easy availability and low price in the past. Now, however, this dependence on coconut poonac for livestock production has become a constraint.

Upto the end of the 1960's the total coconut crop was divided about equally between local consumption and exports (Ministry of Planning, 1968). But according to the Coconut Marketing Board (1975), in the 1970's the proportion available for processing and exports has progressively decreased. The Consumer Finances Survey of 1963 estimated the per capita consumption at 125 nuts. On this basis, the annual consumption needs of the population of 13,063 million (1973) will be 1,650 million nuts. If the population increases by 1.9 to 2 percent or say 250,000 a year (Department of Census and Statistics, 1974), the increase in consumption would be 31.25 million nuts. The Coconut Development Authority (1976) estimates the total production to be in the region of 2,400 million nuts this year. Thus the exportable surplus will be only about 32%.

The annual requirements of coconut poonac for livestock has been estimated at 70,000 tonnes on the basis of about 35,000 tonnes required by the Oils and Fats Corporation and the BCC for the manufacture of provender feed mixes, 20,000 tonnes for the BCC's direct sale of poonac and 15,000 tonne for the other fairly large livestock feed manufacturers, retailers and numerous small dealers in all parts of the country, some of whom receive poonac direct from oil millers (De Silva, 1976a). From January to the end of June this year, the Oils and Fats Corporation has been able to purchase only 5,000 tonnes. Its requirements for the balance part of the year is 10,000 tonnes and it is expected that purchases will not be more than half this amount, (The Chairman, Ceylon Oils and Fats Corporation, 1976).

The BCC Ltd., which is the largest oil miller in Sri Lanka, markets about 40,000 tonnes of poonac a year. In the first half of this year the BCC has been able to market only 12,000 tonnes of poonac. The Corporation is running so short of copra for milling that it expects to work its plants only for 100 days from July to December 1976. In fact, during this period oil milling would come to a complete halt (The Competent Authority, BCC Ltd., 1976). Further evidence of the seriousness of the situation is that none of the 40 registered Oil Millers are operating at more than 25 percent of milling capacity and some are not working at all (De Silva, 1976b). Furthermore, the export of coconut oil was stopped on 1st July 1976 and a little later the export of fresh nuts was also banned (Coconut Marketing Board, 1976).

In as much as Sri Lanka's dependence on tea, rubber and coconut has to be diversified and traditional agricultural practices have to change, livestock production systems too have to change and adopt more appropriate methods suited to social and economic changes. In other words the traditional dependence on coconut poonac for livestock production too must change since it has become a constraint as shown above.

Hitherto neither the Department of Agriculture nor the dairy farmers in the country have found the need to look seriously for substitutes for coconut poonac. In practice, however, substitutes have always been used when available at cheaper prices. For instance, rice bran is mixed with coconut poonac up to 50 per cent in feeds for dairy cattle and pigs and upto 25% in poultry feeds. Gingelly poonac has always been considered superior and when available it has been used in smaller quantities to mix with coconut poonac in order to fortify the protein content. Depending on availability and price, the Ceylon Oils and Fats Corporation, the BCC and the livestock feed traders in general have consistently mixed other feed ingredients on a coconut poonac base for all classes of livestock in Sri Lanka.

It is clear, therefore, that the dairy industry and its future expansion or any other livestock enterprise should not be based on coconut poonac alone in a situation of increasingly critical supply now and very much so in the future. It is also clear that the solution to the coconut poonac shortage is not to ban the export of copra or desiccated coconut (DC) but to programme immediately for substitutes and to get over the total dependence on it (De Silva, 1976b).

## SUBSTITUTES

There are many substitutes for coconut poonac; both non fodder substitutes as well as fodder substitutes. Among the non fodder substitutes there are several protein rich organic feeds of plant origin like gingelly poonac, kapok seed cake, soyabean meal, sunflower seed cake, and milled dhal and gram husk. Besides, there are protein rich organic feeds of animal origin like, skimmed milk powder, fish meal, meat meal, blood meal and waste dry fish and milk powder.

It must be noted that only small quantities of these meals are locally produced. Ninety per cent of the potential local supply from the meat market, fish industry and milk processing factories are wasted. High energy feeds such as maize and sorghum, whole and broken grains, unrefined flour and rice and wheat bran are locally available in varying amounts at different times and are useful substitutes up to a limited extent. Oil extracted rice bran meal is rich in protein but is not locally produced. If Sri Lanka's rice mills can be renovated to produce a better quality bran and an oil extraction industry is introduced, we would be self-sufficient in oil extracted meals which can fully substitute for coconut poonac.

Dried tender grass and leguminous green leaf meal are direct fodder substitutes for coconut poonac. Indirectly any edible leguminous plant materials grown and mixed with grass would substantially reduce the need for concentrate feed and oil extracted cake of plant origin. Leguminous fodder varieties used in Australia and other countries as cattle feed have been grown for more than half a century in Sri Lanka as a soil cover on rubber and coconut estates. Of these *Centrosema* and *Glycine* species are preferred by livestock as against *Pueraria*. There are several promising new varieties such as *Sirato*, *Stylosanthus* and cowpea species. Ipil-Ipil, *Leucaena leucocephala* and *Sesbania* species are tree fodder legumes. (De Silva, 1969).

## PROPOSALS

Against the background of the above considerations, the following are proposed as practical ways of reducing the dependence of livestock industries on coconut poonac as a feed concentrate. (De Silva, 1976b).

### 1. Irrigated Fodder

The bulk of dairy development is taking place in the Wet Zone. But long periods of drought have been an annual recurrence for many years when green feed becomes scarce. Adequate water and fodder are absolutely vital for dairy production. Therefore an effort should be made to popularise irrigated and intensively managed fodder, both grass and legumes, cultivated in small plots, which will yield repeated cuttings. Small plots could supplement existing sources of fodder. Depending on the availability of cultivable land and water, any dairy farm in Sri Lanka can be about seventy-five percent self-sufficient for feed, small amounts of concentrate feed mixes being required for special purposes such as steaming cows, weaning calves, boosting growth and supporting very high levels of milk production.

It is of course ironical that forage is very often in short supply in the Wet Zone. This is because although the annual rainfall is by definition more than 75 inches in the Wet Zone, the distribution is such that there are many rainless months in between the two monsoons. The other reason is that many small dairy farms do not have adequate land to cultivate fodder, and depend on outside sources to graze animals and cut grass at random wherever naturally available. The remedy for this problem is irrigated fodder and conservation by making silage. To launch this programme small water pumps could be supplied under a credit scheme tied to milk sales to the National Milk Board and grass and legume planting material also supplied.

In the Dry Zone which covers two thirds of the country, the dry period may extend from six to nine months in the year in different areas. Therefore irrigation is as vital for fodder crops as it is for other crops specially because it is essential to sustain both quality and quantity in fodder production throughout the year in order to keep up the efficiency of milk production from superior types of dairy animals. Small farms such as colonist holdings can cultivate small irrigated plots of fodder on high land in the homesteads and in paddy fields after the paddy crop is taken. A fodder sorghum crop for instance can yield 30 tons or more in three months with two irrigations and 50 to 60 tons if ratooned in about five and half months with four irrigations. One crop with two irrigations will require only about one acre foot of water whereas a paddy crop requires about five acre feet. Thus the seasonally surplus green fodder can be ensiled which together with more permanent fodder plots in the homesteads and crop refuse and other edible plant material, can make the Dry Zone small farmer too about seventy-five per cent self-sufficient for feed and less dependent on coconut poonac and marketed concentrate feeds, and maintain two or three good milk cows with their calves. Such a programme was prepared by the Ministry of Planning and launched in November 1974. (De Silva, 1974).

## 2. Silage and Hay

Towards the latter parts of the rain seasons and thereafter, there is always a surplus of grass and other fodder material growing naturally and cultivated. Seasonally there is also a large amount of crop refuse, most of which is wasted in this country, unlike in India, Pakistan and in Western countries. The scope or conserved fodder is, therefore, boundless. Silage and hay are in no way inferior to green fodder. They are in fact richer in dry matter and can be enriched further by the incorporation of leguminous fodder material. These are immediate substitutes for coconut poonac and concentrate feeds.

Silage, hay and developed pasture have been the corner stones on which cattle and sheep industries have developed in the world. These are not new practices in this country, but have never got established because coconut poonac and rice bran and even other oil extracted meals and fish meal too have been readily available and relatively cheap in the past. Consequently, the extension effort on dairy development by the Department of Agriculture has also been geared to 'more milk production with concentrate feed' as evident in the propaganda brochures. Another equally strong restrictive element has been the preponderance of small farmers without adequate land for fodder cultivation and the traditional practice of cutting and grazing grass anywhere and everywhere.

In the 1950s every State Livestock Farm cultivated maize and made silage. Many of the larger private dairy farmers too followed this example. From the 1960s the emphasis shifted to pasture development and silage was abandoned. But this too has not been successful and as a result, for the last 15 years or so, there are periodic severe shortages of fodder both on account of drought and the uncontrolled increase of stock numbers. Then the demand for coconut poonac and concentrate feeds increase. Hay making develops from pasture development. Since pasture development has been confined to State Farms and small areas of a few coconut estates, hay making did not catch on in Sri Lanka. In the Polonnaruwa State Livestock Farm, hay from *Brachiaria* pasture has been successfully made for many years. But then nobody else has similar extents of pasturable land, agricultural machinery and free capital to do so. After land reform a few years ago, only the State has large estate holdings. In the private sector which produces 98% of livestock produce in Sri Lanka, the size of land holdings keep shrinking with the pressures of population and development. Thus the scope for pasture development and hay making are decreasing (De Silva, 1977).

However, there is considerable scope for making silage on any size of farm as explained earlier, both by exploiting green feed sources when naturally available and by planned crop cultivation with or without irrigation. For instance, a good forage crop could yield as much as 40 tons of plant material in 3 months whereas a good *Brachiaria* pasture can yield about 30 tons of fodder from 5 cuts in one year (De Silva, 1969). As a country develops and demand increases and the size of land holdings decrease, farming needs to be intensified. Irrigated grass and legume enriched fodder and silage are therefore inevitable for the future and it is not too early to launch immediately. The prices of Coconut poonac and other concentrates are rising all the time and eroding the profitability of dairying (De Silva, 1977).

#### 4. Essentials for a Substitution Programme (De Silva, 1976b.)

From the 1960s Sri Lanka's livestock feed industry, its structure and composition and prices have been determined more and more by the State Sector. For example, the feeding systems using coconut poonac have been popularised by the Department of Agriculture by practice, precept and propaganda and by the types of livestock which have been imported and distributed from time to time. The quality and the prices of marketed concentrate feed mixes are still determined by the Ceylon Oils and Fats Corporation and the BCC Ltd. which together handle 80% of the market at the present time. These are formulated by the Department of Agriculture. The price the National Milk Board pays farmers for milk is fixed by the Government. The market price of coconut poonac is determined by the Price Stabilisation Scheme for Coconut Oil operated by the Coconut Marketing Board. The wheat bran price is fixed by the Flour Milling Corporation. Even maize gifted for livestock feed by the World Food Programme of the FAO is price marked to the consumer at a price not less than that offered to maize producers under the Guaranteed Price Scheme. Besides, all imported livestock feed supplements are controlled.

Therefore the Substitution Programme must also be launched by the Government. The responsibility will fall on several Government institutions. Primarily the Oils and Fats Corporation and the BCC Ltd. will have to produce feed formulations with a low coconut poonac content but of standardised quality at a price lower than other competitive feeds in the market. Obviously, it is a vital strategy to keep coconut poonac prices well above the prices of these feed mixes and in fact just above the economic marginal feed price\* for livestock enterprises. I estimate this price for poonac at the present time to be Rs. 1000 per tonne. The complementary price for coconut oil under the Price Stabilisation Scheme will then be Rs. 4000 per tonne to Oil Millers. The immediate effect on the coconut industry will be long overdue relief for the stagnant and deteriorating oil mills and a price increase to coconut producers which should give some incentive to recommence fertilising coconut and rehabilitate holdings. Of course there will be a small increase in consumer prices which can be offset to some extent by the Government's marketing institutions increasing the supply of grade 2 nuts for household consumption from more outlets at current prices. With the offer of Rs. 1000 per tonne for poonac, the Oils and Fats Corporation and the BCC Ltd. will be able to draw adequate supplies.

The economic effects of this programme on these two corporations is that they are likely to incur a loss on this account, because it will take time to develop protein rich feed substitutes such as cotton seed cake, rice bran cake, rubber seed cake, green leaf meal, fish meal, blood meal etc. the resources of which are now lost in this country. Feed components such as Grade 1 rice bran, dry fish and milk powder waste can be increased to some extent in feed mixes to substitute for coconut poonac. But although these are cheaper, their supply is uncertain. When available, the higher price for coconut poonac can be absorbed in the new lower priced formulations.

Therefore, the substitution programme will require a subsidy to cover operational losses which may be incurred. Such a subsidy can be financed by revenue earned by the export of poonac or coconut oil. If, for instance, the

poonac saved by substitution, which let us assume will be about a fourth of the annual production, is exported, adequate revenue will be earned to subsidise the programme. The present F O B price is Rs. 1400 per tonne.\* The present coconut oil F O B price is also well above the proposed Rs. 4000 per tonne for local oil. The present local price is Rs. 3400. The difference in the export price accrues to revenue and only a small part of this will be required for the subsidy.

It will be seen that there is justification for the proposed substitution programme. A further justification for the subsidy would be that it is more desirable than the loss of foreign exchange when the export of desiccated coconut, copra and oil are cut back or banned and as proposed recently it is necessary to import coconut poonac to alleviate the current shortage and subsidise it. Another justification for the proposed subsidy is the corporations to cover losses from the poonac substitution programme is on account of the high derived value both economic and social from the import substitution of milk locally produced.

The other Government institutions which will be directly involved in the substitution programme will be the Coconut Marketing Board in respect of the proposed pricing of oil and poonac, the Department of Agriculture and the National Milk Board. It is the responsibility of the Department to offer low coconut poonac feed formulations and conduct further research on this subject. Besides, the Department should adopt such recommendations and the proposed forage substitution for poonac programmes on all State Farms and set an example in support of the extension effort which will be necessary in this regard. The National Milk Board could launch this programme by insisting that all milk suppliers to the Board purchase the low poonac content feeds from the two State Corporations. The purchase receipts would be the proof.

The other action the Government would have to take through the relevant institutions simultaneously with programmes to launch forage and concentrate feed substitution for coconut poonac will be the following.

- i. Introducing price incentive and production schemes for substitutes.
- ii. Setting out legal quality and quantity standards for low poonac content feeds.
- iii. Initiating financially supported studies and research to develop new substitutes and improve production technology.

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