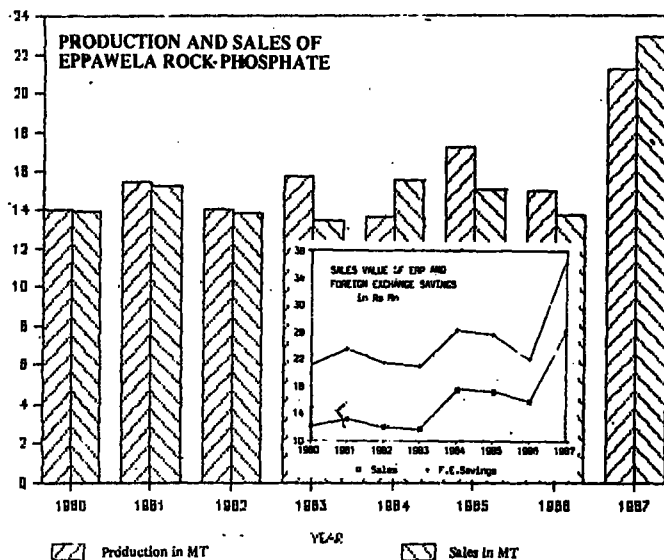


# EPPAWELA ROCK PHOSPHATE



The need to maximise crop production is a basic objective of any country's agricultural policy and fertilizers play a vital role in helping to achieve this objective. Phosphorus, derived from phosphate rock, is an essential element in the fertilizer mix. Phosphate rock forms the basis of a major industry of world wide importance. It is the only suitable source of phosphorus in the manufacture of phosphate fertilizer and phosphate based chemicals. Phosphorus is also recognised as one of the three major elements of plant growth and, depending on the crop and soil conditions, generally about 10-15 percent of the current application of phosphorus as fertilizer is taken up by the crop.

In Sri Lanka a total of around 500 tons of fertilizer is distributed annually through various agencies, for use in all crops. Of this amount an annual average of approximately 40 percent has been for application in paddy cultivation and another 30 percent used in tea estates. A further 15 percent is utilised in the cultivation of coconut and rubber; while the balance is used in minor export crops, food crops and other crops.

Sri Lanka at present imports a large percentage of its fertilizer needs, a cost of nearly US \$ 40 million (Rs.1,200mn) annually, in recent years. Between 15-20 percent of fertilizers used in the country are phosphate-Rock phosphate and Super Phosphate. In 1986, for instance, 26,300 metric tons of Rock Phosphate and 55,700 metric tons of triple Super Phosphate were imported. The local production of Rock Phosphate was 15,000 metric tons in 1986.

The significance of phosphate in Sri Lanka is that there exists a major reserve located at Eppawela, in the Anuradhapura district, about 16 miles from Kekirawa junction. At Eppawela there is an estimated firm reserve of 25 million tons of phosphate rock; while the inferred reserves are in the region of about 60 million tons. These deposits were discovered in Sri Lanka in 1971; but production on a five roller mill has only gone on from 1981. The foreign exchange savings as a result of Eppawela rock phosphate which displaced Imported Rock Phosphate is in the region of over Rs.200 million for the 8 years from 1980-1987.

Eppawela could have produced Sri Lanka's entire requirements of phosphate fertilizer if the necessary technical know-how and machinery were avail-

able. The value of imports of phosphate fertilizer in 1983 was Rs.230 million and in 1984 Rs. 240 million. If the necessary investment is made a return is assured in that a Rs. 250 million per year market is readily available and millions could also be saved in foreign exchange.

In 1987 the tea sector used Eppawela Rock Phosphate for 73 percent of its phosphate requirements, though a 100 percent application has been recommended, except for nurseries. The rubber sector used 30 percent of Eppawela Rock Phosphate though the recommendation is 50 percent. The other rock phosphate requirements in these plantations were met through imported rock phosphate.

Upto now the consumption of rock phosphate in paddy has been negligible. There are reasons for this, although in India (see box) application of rock phosphate has been found to have a good residual effect and has been recommended for rice and pulse cropping systems and a good performance of rock phosphate in acid and submerged soils has been recorded in various experiments, according to agricultural researchers in Tamil Nadu. The discussion and varied views on utilizing the Eppawela deposits, by specialists in their fields, gives a clearer perspective of the limitations and potential in this vast natural resource. As one scientist notes "phosphate use, especially in Asia should grow strongly over the next decade and this will give Sri Lanka an advantage as it is geographically well suited to serve the region."

## Use of rock phosphate for rice

**A**MONG the three major plant nutrients — nitrogen, phosphorus and potassium — the last two need to be only applied as fertilizer, unlike nitrogen which is fixed by the plant species. Phosphorus is mainly derived from primary apatite and sedimentary phosphate rocks. Direct application of ground rock phosphate as fertilizer has been tried in many experiments.

Though rock phosphate is effective only initially, it provides a steady moderate supply of phosphorus in contrast to chemical fertilizers which yield a high level of available phosphorus immediately after application. Since supply of phosphorus to the crop is slow, application of rock phosphate has a good residual effect and is recommended for a rice — rice — pulse cropping system.

The good performance of rock phosphate in acid and submerged soils had been recorded in various experiments. Recovery of nutrient from this source can be increased by adding green manure, pyrites, organic wastes including

weed plants, and farmyard manure. Granulating rock phosphate with urea or ammonium nitrate also results in effective phosphorus fertilization.

Experiments at TNAU with Co-43 paddy (long duration crop) as the test crop and applying rock phosphate mixed with superphosphate in the ratio of 1:1 proved to be a better source of phosphorus. It has been found that rock phosphate mixed with superphosphate helps in increasing yield.

The use of rock phosphate thus, is not only a cheaper nutrient to farmers but will help in conserving valuable foreign exchange by avoiding import of high grade rock phosphate, sulphur and phosphoric acid, required for the manufacture of chemical phosphatic fertilizer

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