



The volcanic islands of Mauritius are located about 800 km east of Madagascar in the Indian Ocean. Mauritius consists of the main island of Mauritius, the much smaller island of Rodrigues and two smaller groups of islands and reefs to the north and northeast of the main island. All islands are of volcanic origin and are surrounded by coral reefs. The climate is subtropical.

Mauritius has one of the strongest economies in Africa. It is largely based on sugar cane production, textile manufacturing, tourism, and an emerging electronic information and technology sector. More than 80% of the cultivated land is used for sugar production. Agricultural production is mainly from estates; there is no subsistence farming on Mauritius. The agricultural sector contributes 6% of the GDP.

The mineral industry of Mauritius is negligible. The main minerals being quarried are basalts for construction purposes (1 million tonnes per year) with smaller amounts of lime (7,000 tonnes per year) being produced from local coral limestone and coral sand (US Bureau of Mines 1995). Potentially important are the polymetallic nodules that occur on the ocean floor at about 4,000 m depth around Mauritius. They contain more than 15% of both iron and manganese and more than 0.35% cobalt (Coakley 1995). The oil company Texaco explored offshore areas at shallower depth for oil in the 1970s.

### **Geological outline**

Geologically, the islands are made up of volcanic rocks between 7.8 million (early Pliocene) and 0.2 million years of age (McDougall and Chamalaun 1969). The 'old' volcanics are mainly olivine basalts and agglomerates with intrusive trachyte and trachyandesitic plugs. The 'young' volcanics are mainly olivine-bearing flood basalts (Simpson 1950; McDougall and Chamalaun 1969).

### **AGROMINERALS**

Only small phosphate (bird guano) resources from the islands of Cargados, Rodrigues and Agalega are reported from Mauritius (Hutchinson 1950). On Cargados, some 3,000-4,000 short tons of guano with phosphate contents of 18% P<sub>2</sub>O<sub>5</sub> were produced annually between 1910 and 1922 (Hutchinson 1950). Whether any of the small guano deposits are still exploited is not known.

Other potential 'agrominerals' available in this island country are crushed basaltic rocks, calcareous coral sands, and raised coral reef deposits (Wright 1968).

#### **Application of Crushed Basalt**

Crushed basaltic rock was tested in long-term experiments as early as 1937 and later in the 1940s and 1950s at the Sugar Cane Research Station of Mauritius. Basaltic rock powder was applied to depleted soils of Mauritius for the main long-term crop, sugar cane. With application rates ranging from 10-90 tonnes of crushed basaltic rocks per acre, significantly higher yields could be achieved (D'Hotman de Villiers 1937, 1961). Whether the application of these large tonnages of crushed basaltic rocks on Mauritius was only a long-term research project or whether this type of rock application is still practiced is not known.

Coral sands and raised reef deposits are currently used for the construction industry (Wright 1968). Environmental concerns are being raised over the extraction of coastal sand and its impact on coastal lagoons.

It is unknown whether any of these calcareous rocks are used for agricultural purposes.

### **Agromineral potential**

In general, the potential of developing Mauritius' agrominerals and rocks for agricultural purposes is regarded as low. Long-term testing of large tonnages of crushed rock fines, waste products from basalt quarries, should be continued to study the long-term effects of these materials on sugar cane soils.

#### *References:*

- Coakley GJ 1995. The mineral industries of the islands of Comoros, Mauritius, Reunion, and Seychelles. Minerals Yearbook, vol. III, United States of the Interior, Geological Survey, 47-48.
- D'Hotman de Villiers O 1937. Rev. Agric. de l'Ile Maurice 1937:89-92.
- D'Hotman de Villiers O 1947. Results of studies on the rejuvenation of our exhausted soils of the humid regions through the incorporation of basalt dust. Rev. Agric. Maurice 26:160.
- D'Hotman de Villiers O 1961. Soil rejuvenation with crushed basalt in Mauritius. Intern. Sugar J. 63:363-364.
- Hutchinson GE 1950. Survey of existing of biogeochemistry - The geochemistry of vertebrae excretion. Bull. Amer. Mus. Nat. History, 96:554 pp.
- Martin-Leake 1948. Soil rejuvenation in Mauritius. Intern. Sugar J. 50:90-91.
- McDougall I and FG Chamalaun 1969. Isotopic dating and geomagnetic polarity studies on volcanic rocks from Mauritius, Indian Ocean. Geol. Soc. Am. Bull. 80:1419-1442.
- Simpson ESW 1950. The geology and mineral resources of Mauritius. Colon. Geol. Miner. Resour. Vol. 1 No. 3:217-235.
- US Bureau of Mines 1995. Mineral Industries of Africa: Islands of Comoros, Mauritius, Reunion, and Seychelles.
- Wright PC 1968. Reports on the raw materials available for cement and brick manufacture in Mauritius, together with the results of mineral reconnaissance and radiometric surveys, 22nd May - 18th July, 1967. Institute of Geological Sciences, London, Report No. 76, 54pp.