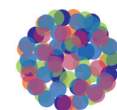


F2 FERTILISERS

HISTORY OF THE FERTILISER INDUSTRY



**CHEMICAL
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Fertilisers - then and now

The process of adding substances to soil to improve its growing capacity was developed in the early days of agriculture. Ancient farmers knew that the first yields on a plot of land were much better than those of subsequent years. This caused them to move to new, uncultivated areas, which again showed the same pattern of reduced yields over time. Eventually it was discovered that plant growth on a plot of land could be improved by spreading animal manure throughout the soil.

Over time, fertiliser technology became more refined. New substances that improved the growth of plants were discovered. The Egyptians are known to have added ashes from burned weeds to soil. Ancient Greek and Roman writings indicate that various animal excrements were used, depending on the type of soil or plant grown. It was also known by this time that growing leguminous plants on plots prior to growing wheat was beneficial. Other types of materials added include sea-shells, clay, vegetable waste and waste from different manufacturing processes.

Organised research into fertiliser technology began in the early seventeenth century. Early scientists such as Francis Bacon and Johann Glauber described the beneficial effects of the addition of saltpeter (KNO_3) to soil. Glauber developed the first complete mineral fertiliser, which was a mixture of saltpeter, lime, phosphoric acid, nitrogen, and potash (K_2O). As scientific chemical theories developed, the chemical needs of plants were discovered, which led to improved fertiliser compositions. Organic chemist Justus von Liebig demonstrated that plants need mineral elements such as nitrogen and phosphorus in order to grow. The chemical fertiliser industry could be said to have its beginnings with a patent issued to Sir John Lawes, which outlined a method for producing a form of phosphate that was an effective fertiliser.

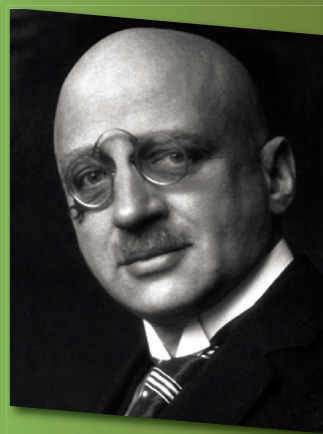
The synthetic fertiliser industry experienced significant growth after the First World War, when facilities that had produced ammonia and synthetic nitrates for explosives were converted to the production of nitrogen-based fertilisers.

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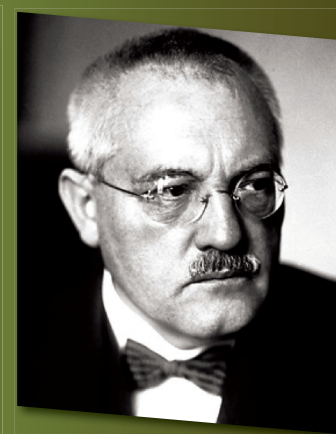
Fertiliser timeline

The manufacturing of fertiliser in South Africa dates back to 1903 when the South African Fertiliser Company (SAFCO) in Durban commissioned the first phosphate plant, which used animal bones as raw material. Subsequent development of the mining industry necessitated the production of explosives in South Africa and enabled the production of large quantities of sulfuric acid as a byproduct. The sulfuric acid was used in fertiliser production, which became a viable proposition. This led to the commissioning of the Kynoch superphosphate plants at Umbogintwini in 1919, and two years later Cape Explosives (Capex) (originally called De Beers Explosives) at Somerset West.

South Africa was dependent on imported fertiliser products, which were mixed and blended with the local products. Import supplies dried up during the Second World War. Price control was introduced as a war measure during the early 1940s and was abolished on



Fritz Haber
(1868-1934)
Nobel Prize Winner
1918



Carl Bosch
(1874-1940)
Nobel Prize Winner
1931

Source: <http://nobelprize.org>.
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In the early decades of the 20th Century, the Nobel prize-winning chemists Carl Bosch and Fritz Haber developed the process that enabled nitrogen to be synthesised cheaply into ammonia, for subsequent oxidation into nitrates and nitrites.

Source: Wikipedia

1 January 1984.

The original Kynoch and Capex joined forces in 1924 as AE&E, which later became AE&CI, and in the 1960s another factory under the same umbrella was established at Modderfontein. In 1944 the name changed to African Explosives and Chemical Industries, AECL Limited.

Foskor, a wholly owned subsidiary of the Industrial Development Corporation (IDC), developed the apatite deposit at Phalaborwa in 1951. The Sasolburg oil-from-coal plant was brought on stream between 1950 and 1960. Raw materials for fertiliser production became available and the Fisons and Windmill fertiliser factories were established at Sasolburg, and the Bosveld factory at Phalaborwa. By 1969 these factories, together with Fisons factory at Milnerton, had become part of Fedmis.

Omnia started with distribution of agricultural lime in 1953 and opened its first fertiliser factory at Sasolburg in 1967/68. Three liquid fertiliser plants at Dryden, Danielsrus and Hectorspruit, a second factory at Sasolburg and a phosphoric acid plant at Phokeng near Rustenburg followed this.

Triomf established its factory at Potchefstroom in 1967. A factory at Richards Bay followed this in the 1970s. In the 1970s Triomf and the non-nitrogen interests of AE&CI joined forces as AECL Limited. The lifting of price control on fertilisers in 1984 coincided with several other events. The most severe drought in two centuries, and the coincidence of the worst recession since 1930s had a serious effect on both farmers and the fertiliser industry. Sasol Limited, which previously had been a supplier to other manufacturers only, established its own fertiliser company (Sasol Fertilisers) and started marketing directly to farmers in 1984. Triomf and AECL separated their interest. Triomf



Apricots



Maize plants

'With ammonium sulfate'

'Without ammonium sulfate'



An old French fertiliser advertisement

Source: Wikimedia Commons

kept the factories at Potchefstroom and Richards Bay, whilst AECL revived the name Kynoch Fertilisers with their factories at Somerset West, Umbogintwini and Modderfontein, which they repossessed in 1986. Kynoch took over the local interest of Triomf. At about the same time an overseas consortium (Indian Ocean Fertilisers (Pty) Ltd, or IOF) took over the Richards Bay plant. IOF produces phosphoric acid and soluble phosphates mainly for the export market.

In 1988, the operational interests of Fedmis, a division of Sentrachem, were taken over by Sasol Fertilisers, Kynoch Fertilisers and Omnia Fertilisers. During 1990, Foskor became a shareholder in IOF. In 1992 Sasol Fertilisers decided to cease its direct marketing to farmers. In 1993, Kynoch Fertilisers took over the nitrogen interests of AECL. Chemfos (a subsidiary of Samancor), which mined rock phosphate at Langebaan, ceased its activities at the end of 1993.

The years 1999 to 2002 were characterised by large scale rationalisation and acquisitions in the industry. Foskor obtained the entire shareholding in IOF, resulting in the latter becoming a fully owned subsidiary of Foskor, and IOF was changed to Foskor Richards Bay. Norsk Hydro obtained the controlling interest in Kynoch, AECL's fertiliser division. Sasol Fertiliser, which had been trading as Sasol Agri since 2000, obtained a 100 percent interest in Fedmis of Phalaborwa, which was operated as a 50-50 joint venture by AECL-Kynoch and Sasol Fertilisers.

This material was obtained from a publication from the Department of Minerals and Energy. Learners - if you use any part of it you need to write it in your own words and include the following in your reference list: Ratlabala, M. E. An Overview of South Africa's Mineral - based Fertilisers, DME Report 41. 2003. p. 1-2.