

VOORSITTERSVERSLAG

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Mnr die President, eregaste, dames en here,

Dit is met genoegdoening dat ons kan terugkyk op die aktiwiteite van die Vereniging oor die afgelope jaar. Ons pluk reeds die vrugte van die verandering in die aktiwiteite en algemene optrede van die Vereniging wat vyf jaar gelede deur die destydse voorsitter, mnr René du Toit, en daarna deur sy opvolger en my voorganger, mnr Otto Scholtz, begin en uitgebou is. Hoewel die misstofbedryf lank reeds een van die basiese en belangrikste bedrywe vir ons land, en in besonder vir die landbou was, is dit tog so dat die bedryf om een of ander rede, wat vir my persoonlik nog altyd onduidelik was, nie oor die algemeen so aanvaar is nie.

Maar in die afgelope jaar veral het dit duidelik geword dat die misstofbedryf wye aanvaarding geniet en dat daar 'n goeie gesindheid teenoor ons posgevat het. Die besef het nou tot baie deurgedring dat die misstofbedryf 'n faktor in ons land is waarmee rekening gehou moet word. Ons het dit dan ook die afgelope jaar ondervind dat toenadering, waar dit in die verlede hoofsaaklik van ons kant af moes plaasvind, nou ook van ander kante af kom. Fakulteite van landbou en verskeie private maatskappye met verwante belange het ons byvoorbeeld gedurende die afgelope jaar genader om nouer samewerking. Hiervoor is ons dankbaar aangesien dit toon dat ons op die regte pad is.

Ons het die afgelope jaar intensief met 'n sustervereniging NAMTA (vervaardigers van Landbou-implemente) geskakel met die doel om probleme van kunsmistodiening en verwante aspekte onder hulle aandag te bring, met die oog op aanpassing van implemente by huidige en toekomstige tendense. Sake wat van gemeenskaplike belang is en oorweeg moet word, is metrisering, tendense in die kunsmishandel soos losmaat, diepplasing opgradering, breie („siurries”) en kunsmisoplossings, lugtoediening en grondkompaksie. By hierdie geleentheid betuig ek ook weer eens ons dank teenoor NAMTA vir die planter wat hulle aan ons geskenk het. Hierdie planter word gebruik vir die plant van ons NPK-proewe en is spesiaal deur NAMTA vir die doel omgebou en werk baie goed. Hierdie gebaar van NAMTA stel ons hoog op prys.

Selfs die publisiteitsmedia het in 'n baie groter mate as in die verlede vir ons beskikbaar geword. Hier moet ons veral die landbouers, die radio en sommige lede van die dagpers noem. Hierdie goeie gesindheid waardeur ons, want ons is almal bewus van die belangrike rol wat massakommunikasiemedia speel in die oordra van inligting. Hier dink ek in besonder aan die baie noodsaaklike verspreiding van inligting aan ons boeregemeenskap.

Verskeie van ons gaste asook sommige van die personeel van ons lidmaatskappye kry dikwels net fragmentaries met ons Vereniging en met die bedryf te doen deur middel van een of meer van ons onder-komitees. Vandag kry u egter die geleentheid om 'n geheelbeeld van die Vereniging en van die misstofbedryf te kry. Dit sal vir u duidelik word dat alles wat ons doen uiteindelik toegespits is op die hoofmerk van die Misstofvereniging, naamlik die bevordering en ontwikkeling van die ekonomiese aanwending van mistowwe ten einde die vrugbaarheid en produktiwiteit van die grond te verhoog, beter en groter oeste moontlik te maak en sodoende die vooruitgang van die Republiek se landbou te bevorder.

About two years ago a research division was established by the FSSA, following discussions which we had with the

Department of Agricultural Technical Services on the co-ordination of agricultural extension and research. A chief research officer was appointed and his first task was to co-ordinate the research results available within the fertilizer industry. Based on this report on results of 66 NPK maize experiments, 13 NPK trials on the most important soil series in the Eastern Transvaal Highveld and North-Western Orange Free State were laid down during the first season of operation. In addition seven NPK and two cultivar and fertilizer experiments were taken over from a member company. After the staff complement was increased, 43 NPK trials were laid down this season, the results of which we are awaiting. It is the first time that NPK experiments on maize have been laid down on a soil series basis on such an extensive scale, the objective being to obtain a correlation between soil analyses and levels of fertilization, taking into account the production potential of the cultivar and the limitations of climatic conditions.

From the FSSA's research report No. 3, based on a total of 109 NPK maize experiments, and published in February, 1972, it is clear that we are well on our way to obtaining data which will enable us to make important refinements to recommendations for fertilizer usage by the country's main crop, viz maize. In the short period of two years we have made great progress. By breaking down the barriers which existed between the research sections of the various member companies we have been able to pool a wealth of information. This is now available to everybody serving the farmers of the maize belt. Whilst bringing together the common interests of the fertilizer research by our member companies, we still honour the autonomy of their respective research divisions in so far as they are free to undertake experiments concerning individual products and interests.

In South Africa today about 0,5% of the Gross National Product is being spent on research. This figure is only about one-third to one-seventh of those applicable in other advanced countries. The figure for the USA is about 3,6%. Of the 0,5%, agriculture takes an enormous bite and, with the costs spiralling, those who have to finance research, whether in the public or private sector, have become disenchanted with the high cost relative to the low knowledge output of many research projects.

Within the fertilizer industry we have been able to set an example of co-operation in research. I realise that this has been done on a relatively small scale and with a small budget. But because we are looking after our cents and have clearly defined objectives, our experiments are being planned to give us the highest possible output of experimental results that can be profitably implemented by farmers. It is the final outcome, measured in terms of the results obtained in practice, which counts. Our limited budget forced us to set priorities. For instance, most of the 43 experiments laid down in the spring of this season were established on the predominant soil series with the highest yield potential and we are confident that our results output per cost unit will be very satisfactory.

All that I wish to emphasize is that, whether a private body or a state institution is doing research, there is always a limit to resources, and I therefore plead with all who are concerned with research in agriculture to set medium to long-term objectives and to fix priorities on the basis of which manpower and funds can be allocated in order to improve results output per cost unit.

* Oorlede 21 Junie 1972

'n Saak wat na my mening in die nuwe jaar juis deur die Bestuurskomitee van die Vereniging oorweeg behoort te word is om, waar 'n natuurlike uitvloeisel van ons navorsingswerk voorkom en dit kan aansakel by navorsing wat by landbouinstitute of -fakulteite gedoen word, sodanige navorsingsprogramme finansiële te steun indien die betrokke instansie sou onderneem om 'n spesifieke aspek van ons program te ondersoek. Sodoende kan ons besmoontlik daartoe bydra dat beide partye se effektiwiteit verhoog word.

In die Department van Landbou-tegniese Dienste se voorlegging aan die Kommissie van Ondersoek na die Landbou stel die Departement dit dat daar vir spanwerk, binne eie geleedere, inter-departmenteel en ook met organisasies buite staatsdiensverband geywer word. Hiervan het ons goeie ondervinding. Ek het reeds verwys na die sameprekings met die Departement wat gelei het tot die totstandkoming van ons navorsingsafdeling en afgesien van mielie-cultivarproewe, onderneem ons ook in samewerking met die Departement Landbou-tegniese Dienste grootskaalse koöperatiewe veldbemestingsproewe op 'n paar plase in die Oos-Transvaalse hoëveld. Soortgelyke proewe word in samewerking met die Natalse Veeboere-Koöperasie op plase in die Natalse Middellande uitgevoer. Die resultate van hierdie proewe is baie belowend, veral ook vanuit 'n veldbestuursoopunt.

Vandag kan ek ook getuig van die goeie samewerking wat ons geniet van die onderskeie streke en substreke van die Departement en Georganiseerde Landbou in al die gebiede waar permanente skakelkomitees in die lewe geroep is. Aan hierdie betrokke persone betuig ek ons dank want ons weet dat hierdie skakeling reeds baie bygedra het tot 'n beter verstandhouding en 'n groter mate van eenvormigheid in optrede in belang van die boere. Die belangrikheid van hierdie skakelkomitees om plaaslike beleid en riglyne te bepaal moet nie uit die oog verloor word nie.

'n Geslaagde simposium oor kalk is in die Transvaal-streek behou. In die Vereniging se program vir 1972/73 is daar voorsiening gemaak om meer aandag te skenk aan die kalkvraagstuk, nl dat daar nog steeds jaarliks veels te min kalk deur die boere gebruik word.

'n Konstruktiewe voorwaartse stap van die afgelope jaar is die sukses van ons uitgerekte vertoë om hoër sinkpeile in sekere bemestingstowwe toegelaat te kry. Dit kan alleen tot heil van die mieliebedryf strek.

Afgesien van boeredae wat deur die Misstofvereniging gereël is, en wat goed bygewoon is, het die personeel ook by boeredae opgetree wat deur ledemaatskappye georganiseer was. Die Hoof-navorsingsbeampte het ook by verskeie geleenthede die veldpersoneel van lidmaatskappye toegesprek in verband met ons navorsingsprogram en resultate.

Die voorbereiding en beskikbaarstelling van opvoedkundige artikels vir die landbou- en plattelandse pers word steeds voorberei en beskikbaar gestel, en die hersiene uitgawe van die baie gewilde pamflet „Die Mieliestorie” sal eersdaags vir verspreiding beskikbaar wees.

Ter nastrewing van ons oogmerk om uiteindelik elke jaar vier landboubeurse toe te ken, het ons vanjaar 'n derde beurshouer bygekry. Die beurshouers ontvang elk R500 per jaar en is ongebonde.

Die feit dat die Misstofvereniging as sekretarisse vir verskeie landbouverenings optree, het reeds baie bygedra tot nouer skakeling met aanverwante dissiplines in die landbouwetenskap. Ek is van mening dat hierdie samewerking in die toekoms steeds uitgebou sal kan word tot voordeel van die Suid-Afrikaanse landbou in die breë.

Twee van ons lidmaatskappye, nl AE & CI en Fedmis (destyds nog Fisons en Windmeul), het in die verlede sowat R100 000 bewillig om gronde te laat klassifiseer. Sekere gebiede in die Oos-Vrystaat is egter nog nie gedoen nie en die ander lidmaatskappye van die Vereniging is bereid om 'n verdere bedrag te bewillig mits ander belanghebbende organisasies ook hulle bydrae sal lewer.

Again during the past year short courses and demonstrations on the use of fertilizers were given in certain Bantu areas. Copies of our film "Food from the Soil" are still being circulated in Bantu areas. There is also a considerable demand for colour-slide stories. The primary problem in the Bantu areas is the lack of distribution and credit facilities for fertilizers. It is our intention to devote more effort to the promotion of fertilizers in the Bantu areas and we are currently considering certain recommendations in this respect.

During the past year the Society was incorporated as a non-profitmaking concern in terms of section 21 of the Companies Act.

The internal affairs of the Society were streamlined to the extent that the number of sub-committees was decreased from ten to five. A certain amount of overlapping occurred between certain sub-committees and therefore it was concluded that, apart from the management and executive committees, the following committees would be able to cope with the work of the Fertilizer Society: Economic sub-committee, Supplies sub-committee and the Technical sub-committee. On these sub-committees representatives are appointed by all member companies. Representatives of member companies in their personal capacities without company affiliation are appointed on the Promotion and Editorial sub-committees.

In expressing my thanks to my colleagues on the Management and Executive committees and the representatives of member companies on the various sub-committees for their valuable contributions towards promoting the work of the Society, I wish to remind them of the days, not so very long ago, when we did not have what we have got today. Keep in touch with your Society and ensure close liaison between your personnel and the staff of the FSSA. By so doing the Society will go from strength to strength and will be of even greater value to its member companies. In conclusion I should like to express, on behalf of the Management committee, to the director and his staff our sincere appreciation of the very valuable contribution they have rendered the Society during the past year.

AN HISTORIC ECONOMIC REVIEW OF THE DEVELOPMENT OF THE FERTILIZER INDUSTRY IN SOUTH AFRICA

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As far as can be ascertained the first use of chemical fertilizer in South Africa took place in 1890 when a few hundred tonnes of "grain and hay mixture" was shipped to South Africa from England. In the 80 years that have since elapsed an industry has been born and has, after many vicissitudes, grown into a young giant of major economic importance to South Africa.

The first event of economic significance in the history of the fertilizer industry in South Africa was the erection in 1904 of a small superphosphate factory at Umbilo, Durban, by the South African Fertilizer Company (better known as SAFCO). This plant operated until 1910 when at the instigation of the Government, the Conference Line introduced cheap freight rates between the Continent and South Africa. This so encouraged imports that the first fertilizer industrial venture was effectively killed.

Prior to the first world war, fertilizer consumption in South Africa was, relative to current usage, negligible. In 1914, for example, about 3 500 tonnes plant food (some 38 000 tonnes product) were used, hardly enough to support an economically-viable industry. Since the death of SAFCO's factory no industrialist was over-anxious to have another shot at investing fixed capital even although the Union Government of the day was known to be encouraging such a venture.

It required a war to get things moving. Between 1915 and 1918 the importation of fertilizers was considerably restricted and those farmers who had been introduced to fertilizers during the preceding quarter century were, of course, the first to notice the falling-off of yields. It is a well-known fact that a shortage stimulates demand — and so it was in 1918/19 that Kynoch Limited recognised the demand and erected a factory at Umbogintwini where they used cheap waste acid from the explosives process to manufacture superphosphate from imported phosphate rock.

A few years later, in 1921, Cape Explosives works at Somerset West followed suit and built a similar factory. It is interesting to note that these two factories, with modifications and extensions over the years, were the only superphosphate factories in South Africa for the next 40 years.

Now that the basic fertilizer was being produced in South Africa it became an economic proposition to import bulk quantities of nitrogen, mostly in the form of ammonium sulphate from Europe's large steel industries, and potassium chloride, and to manufacture fertilizer mixtures of own choice. Attached, therefore, to each of the superphosphate plants was a "mixture" unit which blended or "dry mixed" the three ingredients.

Remember that prior to 1919 all fertilizers had been imported in the finished form. These were now being manufactured in South Africa and those companies that had previously imported, recognised their vulnerability. So it was that during the next few years a number of dry-mixing plants were established in the vicinity of Umbogintwini and Somerset West. These were Fisons, Safco, Bullbrand and Websters in Natal, and Oskop in the Cape. Others were to follow later, viz Windmill, Netherlands and Atlantic. We thus got a concentration of industry at the coast despite the fact that the major area of fertilizer use was rapidly developing inland.

The 1920's witnessed a period of slow but steady growth in fertilizer consumption as the country settled down after the war but just as economic revival was building up, South Africa was hit not only by the major world depression but also by disastrous droughts, followed by floods and locust plagues. Many farmers were ruined and others hard hit, whilst consumption of farm produce was reduced due to the economic plight of the consumer. In those days, and to a certain extent today, when times were hard the farmer reduced or stopped altogether the use of fertilizer. In the 1930's this trait affected all fertilizer companies but as is to be expected the hardest hit were those who had spent relatively large amounts on the erection of factories. Of these, the Kynoch and Capex superphosphate plants, which in the interim had been merged and were now part of the African Explosives and Industries complex, were major sufferers and operated at a loss for a number of years. The position was further aggravated by importations from depression-hit fertilizer factories on the Continent who made use of cut-rate freight rates to dump product in South Africa. A railage rebate system was introduced in an endeavour to assist agriculture, and in an attempt to protect the local industry the Government belatedly introduced dumping duties, but just as agriculture was again finding its feet the outbreak of the second world war introduced a crisis of first magnitude.

In 1939 was kunsmisverbruik in Suid-Afrika omtrent 200 000 ton en hiervan was nagenoeg 170 000 ton superfosfaat. Merendeel van die superfosfaat was op daardie stadium reeds in Suid-Afrika vervaardig, maar alle grondstowwe om dit te produseer moes ingevoer word. Die wêreldoorlog het Suid-Afrika in 1940 nie veel geaffekteer nie maar in 1941 het skeepstekorte na vore gekom en in 1942 was daar 'n tekort aan rotsfosfaat wat vir etlike jare daarna ondervind sou word. Skeepsvrag en produksiekoste, wat gedurende die dertigerjare baie laag was, het nou drastiese begin styg en in 1941 het die Staat pryse beheer ingestel in 'n poging om pryse te stabiliseer. Kort daarna beperk die Departement van Landbou die ontsagtelike reeks van mengsels tot slegs agt om die boer se keuse te vergemaklik. Terselfdertyd stel die Staat 'n subsidie vas van £1 per kort ton op alle goedgekeurde misstowwe aan boere verkoop. Gedurende 1942 word rantsoenering van misstowwe nodig as gevolg van die uiterse tekort. Permitte vir die aankoop van kunsmis het vir etlike jare na die oorlog van krag gebly as gevolg van na-oorlogse skeepstekorte en produksieprobleme. Ek dink u sal saamstem dat hierdie 'n moeilike tydperk vir die industrie was met een vorm van kontrole volgende op 'n ander met sulke kort tussenposes.

Dit is nogal noemenswaardig dat toe dit besluit was om die mengselreeks te beperk tot agt, daar sowat 360 verskillende misstowwe geregistreer was onder 'n verskeidenheid van benamings soos: Wortelmengsel, Spesiale ertappel No. 1, en Standaardmengsel (wat dit ook al mag gewees het), ensovoorts.

In order to alleviate the war-time phosphate shortage, African Metals Corporation (Amcor) opened up a rock deposit at Langebaan in 1943 and erected a beneficiation plant at Bellville. This venture helped to reduce the phosphate shortage by supplying untreated raw rockphosphate and it is still in operation today on a much larger scale.

The twenty-five years after world war II — from 1945 to 1970 — witnessed remarkable growth for the industry.

It can be said that the infant born some 25 years before had remained an infant until 1945. It was adult in years, but uncertainty, depression, droughts, floods and a major war had left their mark, and signs of malnutrition were in evidence. But the end of the war brought with it that feeling of optimism so necessary for success. Despite post-war supply problems the industry embarked on major extensions to superphosphate and mixing plants. AE & CI increased the combined capacities of their Umbogintwini and Somerset West factories from 350 000 tonnes to 600 000 tonnes per annum. The numerous dry-mixing plants also underwent modifications at this time.

During this immediate post-war period, control over imports of superphosphate was introduced as the country's requirements could be met from local production. Cognizance had been taken of the bitter lessons learned in the late 1930's when the free importation of dumped fertilizers very nearly killed the infant industry.

Undoubtedly, the highlight of this post-war period was the growth of the nitrogen market. In 1939, the last year not affected by the war, consumption of nitrogen was about 3 000 tonnes N. By 1970 this had grown to 181 000 tonnes N (a 60-fold increase). During the same period the phosphate market grew from some 14 000 tonnes P to 123 000 tonnes P (a 9-fold increase) and potash from 2 000 tonnes K to 80 000 tonnes K (a 40-fold increase).

The United States had taken the lead in the use of nitrogen and had achieved most gratifying results. It was obvious that nitrogen was about to play a major role in South African agriculture especially as our two most important crops, maize and sugar, were heavy nitrogen feeders. Importations of nitrogen grew by leaps and bounds and it was in this climate of exceptional growth that AE & CI erected South Africa's first major fertilizer nitrogen plant at Modderfontein in the late 1950's. (By-product ammonium sulphate had been produced by Iscor, Sasol and AE & CI for a number of years prior to the erection of the Urea plant at Modderfontein.)

Of major economic importance, too, was the development of the Phalaborwa phosphate deposits by the Phosphate Development Corporation (Foskor) in the mid-1950's. Over the years this major undertaking has expanded to the point where phosphate rock imports are no longer necessary.

The development of Foskor and the erection of the Urea plant at Modderfontein were the first steps towards a goal long cherished by the Government — the utilisation, as far as was economically feasible, of local sources of raw material.

Toward the end of the 1950's Fisons, who until then had operated as dry mixers, went into the basic production of superphosphate at their new factory at Sasolburg. This was the first inland factory and was situated in the main fertilizer-consuming area of South Africa. It was closer to the new local sources of phosphate rock and nitrogen than the coastal units. The establishment of this factory introduced anomalies and complications in the existing price control formula, as previously all prices had been calculated on coastal costs and fertilizer was sold on a for coastal basis and a large rail rebate was in force to reduce transport costs to inland farmers.

These anomalies resulted in unsatisfactory price determinations, with the price controller having difficulty in satisfying both the coastal and inland manufacturers. Foskor, too, were in an awkward position vis-a-vis imported rock which was still being used in fairly large quantities by the coastal factories. All these complications were creating uncertainties in the minds of producers and it was

appropriate that in 1961 the Minister of Economic Affairs appointed a committee of enquiry into the fertilizer industry. The recommendations of this committee, aimed at future rationalisation in the industry, introduced various factors which were to have widespread economic repercussions. The factors are too numerous to detail in short history, but of the most important, the removal of the rail rebate was instrumental in moving product inland from the coast. It made the coastal factories in Natal less viable and led in the longer term to the appearance of the smaller dry mixers, and in 1963 AE & CI moved part of their Umbogintwini factory to Modderfontein in the Transvaal. Shortly thereafter Federale Volksbelgin gins erected a phosphoric acid and double superphosphate factory at Phalaborwa (under the name of Bosveld) and Windmill commenced production at their new factory at Sasolburg. Omnia, who for some years had been spreading lime, erected a small mixing plant at Sasolburg about the same time. These major enterprises were immediately followed by AE & CI erecting a phosphoric acid plant at Modderfontein for the production of double superphosphate as well as a large sulphuric acid plant using local pyrites as raw material, and a new company Triomf, building an entirely new factory (including phosphoric acid and double superphosphate) at Potchefstroom. The nitrogen front Sasol extended their nitrogen capacity by building a limestone ammonium nitrate unit. Fisons erected an ammonia and limestone ammonium nitrate plant at Milnerton in the Cape, and AE & CI an ammonia and urea plant at Umbogintwini in Natal. Both these plants made use of oil refinery waste gas as their raw material. A few years later AE & CI erected a phosphoric acid plant at Somerset West. Foskor, during this period, kept pace with the demand for phosphate rock.

So we see that suddenly within a period of less than ten years, South Africa found itself in the position which with the exception of potash, it was no longer dependent on fertilizer imports. In fact, we now had surpluses available for export. Over R100 million was spent during this period and the malnourished infant of 1945 had suddenly become a young giant.

Terwyl hierdie fantastiese groei besig was om plaasvind, is 'n verdere aanbeveling van die komitee van ondersoek toegepas. Dit het ten doel gehad om die subsidie R2 per kort ton te vervang met 'n subsidie relatief tot produkwaarde, of plantvoedselinhoud — ook dat die bedbetrokke by die verwydering van spoorvragrabatte op rstof tot die bedrag van beskikbare subsidie gevoeg mword. Ek dink die meeste van ons is nie bewus van enorme implikasies wat hierdie stap op die ekonomie die boer gehad het nie.

Kortliks: Toe subsidie op 'n gewigsbasis betaal v het vir die boer geen of min aanspooring bestaan om tgraad misstowwe te koop nie. Die nuwe subsidie sket het alles verander en die weg gebaan vir 'n voorkeur hoëgraadse produkte.

'n Eenvoudige sommetjie toon dat as die 1971 plantvo seltonnemaat in die jaar 1964 se lae-gradse produkte koop moes gewees het, sou daar 'n ekstra 1 miljoen fisiton produk vervaardig, opgeberg, vervoer en toegedien mword. Dit is 50% meer tonne as wat in 1971 toegedien v Dit is beraam dat gedurende 1971 die boeregemeens sowat R2 000 000 op spoorvrag alleen bespaar het. Die kullatiewe besparing hierop sedert 1964 is in die omgenvan R10 000 000.

Mention should also be made of the fact that during this period sulphuric acid surplus to the requirements of the uranium industry became available. To save foreign currency on sulphur imports this acid was used by factories situated in the vicinity of the uranium acid plants.

The introduction some eight years ago of early delivery rebates has resulted in large capital expenditure savings not only for the industry in the provision of stores but also for the South African Railways, who were finding it increasingly difficult to handle the large tonnages during the peak season.

In the past two or three years, events of great economic importance to the country have taken place. I refer to the mergers, firstly of Optichem (the old Windmill) and Fisons to form Fedmis (Pty) Limited, and secondly of Triomf and a portion of the AE & CI fertilizer interests to form Triomf Fertilizer (Pty.) Limited. The effect of these mergers has been to further rationalise production and has also resulted in large savings in selling and administrative costs. In terms of the price control formula 100 per cent of all savings effected is passed on to the farmer. The selling prices of fertilizers in 1972 would have been considerably higher (by about R1 per tonne) had these mergers not taken place.

A review of this nature would be incomplete without an attempt to identify the factors that have influenced the development of the industry. As I see it these factors are

- (i) The research, advisory and educational work done by the Department of Agriculture, the universities and by the technical and sales forces attached to the fertilizer companies. Without these services the demand for fertilizer would never have been what it is today;
- (ii) The better educated post-war farmers, many of whom enjoyed the opportunity of attending universities or agricultural colleges;
- (iii) The various incentives for farmers introduced by the Government from time to time, such as subsidies, railage rebates, credit facilities, etc;
- (iv) The incentives for manufacturers introduced by the Government, eg control over the free importation of fertilizers and the imposition of dumping duties;
- (v) The growth of the co-operative movement in South Africa, and the aid it gives to farmers;

(vi) Finally, the faith that certain industrialists had and still have in the future of agriculture in South Africa. There were the times when they suffered sometimes by themselves and at other times with farmers — times when the Government turned a deaf ear to their pleas and times of uncertainty. But their faith sustained them.

THE SOUTH AFRICAN FERTILIZER INDUSTRY
(A few facts of historical interest)

(1) THE GROWTH OF NPK

Year	Country's usage in tonnes					Per-centage Plant food
	N	P	K	Total	Physical	
1914	500	2 500	500	3 500	38 000	9,2
1940	3 000	14 000	2 000	19 000	200 000	9,5
1950	10 000	39 000	5 000	54 000	570 000	9,5
1960	46 000	65 000	29 000	140 000	1 230 000	11,4
1970	181 000	123 000	80 000	384 000	1 946 000	19,7

Compound growth since 1960	N	17,7%
	P	6,5%
	K	10,9%
	Total	10,7%

(2) GROSS PRODUCT VALUE

In 1970 this was approximately R125 000 000.

(3) CAPITAL INVESTMENT (FIXED AND WORKING)

1960 approximately R 60 000 000
1971 approximately R190 000 000

(4) MANPOWER EMPLOYED

In 1970 approximately 7 000 made up of 2 000 Whites and 5 000 Bantu