CHAIRMAN'S ADDRESS

DEVELOPMENTS IN THE FERTILIZER SOCIETY OF SOUTH AFRICA AND THE FERTILIZER INDUSTRY

R. DU TOIT, African Explosives and Chemical Industries Limited

Man shares with all living organisms the fundamental urge to survive and to procreate his species. He is however endowed, more than all other organisms, with an adaptability and the intelligence to modify or circumvent his surroundings.

An important, if not the most important fundamental requirement for survival is the procurement of adequate supplies of food. Here particularly, man has shown his capacity and capability, and it is astounding how he has conquered his environment in this respect, in spite of the sometimes adverse forces of nature. Some of these, such as the climate, still appear to hold the upper hand in the limit, but man has gone far to mitigate their effects. I believe that man has not exhausted the potential in this direction of the information he now has available, let alone what he will still discover and invent. Man soon realised that he lives on the lower forms of life, and started to tend what gave him food. From simple husbandry beginnings he has taken the cultivation of those forms of life which sustain him in turn, to great lengths aided initially by experience and latterly by science and technology.

One of his great industries today, is therefore the production of animal and vegetable crops. Although we know of attempts to synthesise human food directly from inert and lifeless materials, and others where micro-forms of life are used to synthesise the materials man needs, vegetable life still remains the mainstay from which man draws his sustenance directly or indirectly.

Although the feeding of vegetable life has been progressed for ages, using the residues of previous animal and vegetable life to feed the new cycle, it is only a hundred years ago that man realised the importance of mineral nutrients, and set himself to convert these from the vast deposits available in, on and around the earth, into forms which plants could utilise. At this stage, it may be propitious to survey where the industry of manufacturing plant nutrients from mineral deposits has come to in South Africa and where it is going.

Our South African fertilizer industry, after some ineffective attempts at establishing itself at the turn of the century, became viable fifty years ago with the initial manufacture of single superphosphate.

Today, it is a capital intensive industry of a chemical nature, represented by sixteen member firms of the FSSA operating twenty factories, including a major lime works, in this country. With a further three fertilizer factories operated by non-members, and several minor lime works the industry represents a fixed and working capital of R166,000,000. In 1967, this industry produced, and South Africa consumed, some 2.4 million physical tons of fertilizer materials valued at approximately R80,000,000. In round figures this production was in the form of 400,000 tons of agricultural lime, 850,000 tons of NPK mixtures, 234,000 tons straight nitrogenous fertilizers, 705,000 tons processed phosphates, 156,000 tons raw phosphates, 37,000 tons straight potash and some 8,000 tons diverse materials, the NPK mixtures and processed phosphates taking up 1.8 million tons of granulation capacity. In terms of plant food content, these tonnages represent 140,000 tons N, 122,000 tons P and 80,000 tons K.

There exists in our country or will be very shortly available, a mining capacity exceeding 180,000 tons of P as raw rock phosphate, a conversion capacity for 230,000 tons P, nitrogen fixation capacity for 345,000 tons N, and granulation capacity for 2,000,000 tons of mixtures and phosphates.

There is therefore adequate capacity, dependant on plant reliability, for our foreseeable demands for fertilizers in the forms required, as long as our importation of potash, of which we have no exploited sources yet, is assured.

The industry employs only 2,500 Europeans and 6,000 Bantu, thus underlining again the capital intensive nature of the industry.

The future trend of this industry is already apparent in the evolution we have seen unfolding in the past decade, during which the average increase in physical volume was at the rate of 4% compound interest per annum with a tendency to drop, and the plant food content rose by 10.5% compound interest rate per annum, with an accelerating tendency. For the three plant foods, nitrogen, phosphate and potash, the compound growth rates were 16%, 6% and 16.5% respectively. Against the earlier simple materials, containing large quantities of diluents, and physical mixtures of these salts in powder form, all of which were of inferior physical quality tending to set solid, aggregate or smear, making handling at least unpleasant, we now have concentrated materials. These are sometimes of a complex nature containing various plant foods in chemical combination, in ever-increasing quality of granules and prills, giving dustless free-flowing materials of good handling and storage qualities, capable of being accurately metered and placed.

We are not restricted to dry goods anymore, and where the advantages of slurries and liquids are applicable for whatever reason, we can and will use them as fertilizer materials to an ever-increasing degree.

These materials are powerful in effect, and misuse, through ignorance or for any reason, is bound to result in disappointing if not disastrous results. The accurate metering and placement of such materials, after proper selection with regard to soil, crop, management, economics and climate is becoming of more and more importance and the industry has a vested interest that this should not become a limiting factor to the production and use of such materials. The industry may therefore have to concern itself with the availability, through and by the machinery sector, of proper equipment, and/or foster the application of its materials by skilled operators, operating under contract to the customer. The farmer in future may be purchasing plant food applied in the soil, instead of merely in the bag. The implications for existing packaging, transport, labour, distribution channels, farm labour and management are far reaching.

It would have been easy if the invention and production of better materials to feed plants, solved man's problems of raising crops. Unfortunately, the mere

availability of good materials does not build a house. Problems in today's highly integrated society are not singular, but usually very complex. Raising crops is therefore not only a question of adding technologically effective products to any soil at any time and in any quantity, but resolves itself into a complex problem of management. Similarly to the many other powerful tools placed at our disposal by the expansion of technological knowledge, these plant foods have to be integrated into a system to derive the full benefit from them. The management level and the education of the user becomes important, and at the same time, other factors such as capital and labour availability, market demand and preference, and all the factors pertaining to any business venture come into play. In addition, in agriculture there are the factors of soil and climate.

The problem of our industry is therefore not the supply of adequate amounts of the correct plant food to the general agricultural market. Peculiarly, there is an idea abroad in some quarters that the industry should have discharged its obligation by fulfilling this aspect.

No cognizance is taken of the fact that the industry's products cannot be used to their full advantage if the infra-structure of the consuming industry is not adequate, or geared to take full advantage of the products offered.

It is generally accepted that the technologist today has some moral responsibility for the proper and economic use of the tools and materials which he offers to the consuming public. Admittedly, he could be tempted, if he recognises fundamental shortcomings, to enter into those fields which are rightly the province of other experts. This is a tendency which all agree has to be constrained.

Let us look at the facts well known not only to the fertilizer industry, but often repeated in public, about some circumstances under which the customers are operating. By present cropping levels and morgenage under crops, our Department of Agriculture recommends the addition to the soil in South Africa, of 326,000 tons N, 200,000 tons P and 144,000 tons K, against an actual consumption in 1967 of 140,000 tons N, 122,000 tons P and 80,000 tons K. The grain alone in the 60,000,000 bags maize crop such as we expect for the present season, will remove 90,000 tons N, 18,000 tons P and 15,000 tons K.

Our population increase is at the rate approaching $2\frac{1}{2}\%$ per annum, and the trend in food consumption is an increase of $1\frac{1}{4}\%$ based on calories consumed per capita, with a swing from carbohydrates to proteins. We have available in this country of ours, one morgen arable land per head of the population existing in 1960, of which $\frac{3}{4}$ of a morgen has already been cultivated.

I do not need to carry out calculations to indicate to you that if the present trend is not altered, arrested or changed, the country simply will fall very short of feeding its population by the turn of the century, and unless something drastic is done, we will have exhausted the fertility of our soil to possibly the point of no return.

It is a well accepted fact that the judicious use of fertilizer represents the main marginal economic factor in crop production, in addition to its vital role of the preservation of soil fertility under proper management Once again I am not denying the importance of other factors. It is unfortunate that in the past unilateral attempts by fertilizer firms have not been successful, either in bringing this fact home, or getting it as widely accepted as it needs to be. It is possible that the ineptitude of the firms concerned in the art or science of communication was responsible. Where the attempt was genuine, suspicion was often attached that mere expansion of their business, which would have been a natural corollary, was the firms' primary aim, without any cognisance of the overall good of the customer. Recognition of a problem and the extent to which the image of industry and trade was suffering, and of the common denominator in their aims and the aspirations of their customers, led to the firms founding the Fertilizer Society of South Africa, to be a vehicle to realise these common aims, as is so clearly stated in the Society's constitution.

This is the Ninth Annual General Meeting of the Society. The Society has passed through several vicissitudes, and has had its fair share of troubles with the result that progress has not been what it could have been. I think we have clarified ways and means for ourselves, and I would like to indicate what the Society has now initiated and hopes to accomplish.

The Society clearly realises that there are trilateral interests in the agricultural field, namely, those of the:—

Private sector
Government sector and
Organised Agriculture

If these meet and are firmly joined at the right spot, a tripod will result. It is wellknown too that a tripod is the only stable structure on rough ground.

The Society aims at obtaining proper recognition by themselves and by others of the role of each, and sees the Government sector as responsible to provide the infra-structure for farming, and to lay down overall policy. Organised agriculture is there to tend the interests of its members, to teach and promote self reliance and to condition members to opportunities and to recognise the available aid, while the private sector is there to provide the production requisites needed, the knowledge of how to use them, and to indicate where they fit into the existing structure, or whether they may cause or necessitate basic changes. The division boundaries between these fields are not clear, but indeed very grey.

As long as we have suspicion about each others motives and are concerned with our own empire building, more time and energy will be devoted to fighting over marginal areas than we can afford to waste. It is unfortunately much easier and much more tempting to resist the efforts of another than to engage in constructive work. I want to declare the good faith of the industry, and particularly the Society, in promoting its own role, which I repeat is the provision of adequate supplies of better products, with a knowledge of how and where these should be used to the advantage of all concerned, without detracting from the responsibilities of others.

If the Society should indicate that the existing infrastructure is not adequate to take full advantage of its advanced products, this will be because it is in honour bound to declare this to those concerned with the area, and we hope that the effect will not be to merely arouse sensitivity, or lay the Society open to the charge that it is unduly critical, or trying to teach agriculture or the Government Departments their own jobs, or usurping their responsibility.

It is common to the chemical industry, of which the fertilizer industry is part, that it has brought a revolution in our lives, and in our own lifetime. I wish to quote as examples only two fields; those of plastics and antibiotics.

Nylon and penicillin were not just produced and offered for sale for somebody to find a use for them. Their originators determined and demonstrated their uses and limitations. In the case of the plastics industry, customers were instructed in the use of these materials, to the extent of re-structuring their industry and sometimes their management practices. Somebody may quickly point out at this stage, that the Government has an extension service which could do this for fertilizer materials, but I dare to say that if this extension service helped to provide the infra-structure in farm management and farming, which would enable the farmer to make the maximum use of his facilities, it has more than adequately discharged its responsibility, and I cannot see that it could cope with evaluating and applying the specialities that the private sector would invariably offer. (I do not refer to the regulation or registration of practices). I am therefore saying today, to people who consider that the industry has fulfilled its duty when it has invented, produced and offered a material for sale, and that it is then up to the Government service to advise on it, and the user to incorporate it using only his existing or past knowledge, that they are retarding progress to the disadvantage of the farmer, whom they profess to help and protect.

Whilst we know that there are vociferous protagonists of this view, I am glad to say that the attitude is not universal, and we know from an attitude survey that this is not subscribed to by the majority of farmers. Signs of recognition of the role of the industry and improved relations are clear, and the presence of guests from organised agriculture and the Government sector here today, is proof that we have at least advanced to the state of being able to talk together, even if I have to labour these points.

I was fortunate in having an opportunity to discuss the relations between these sectors in the United States of America, and when I asked to what the USDA, the American industrial firms and their agriculture owed their acknowledged eminence, the reply, without any prompting on my side, was that this was achieved by the cooperation amongst these sectors, by acknowledged and not stifled rivalry, and by each not hesitating to pounce on any advantage or advance offered or made by another and developing these together.

To pass from the general to the more specific. The FSSA recognises that although fertilizer practice is increasing, the fundamental level of knowledge is low, and that basic education to understand the potential of our soil and means of raising it is very necessary.

We also have a large Bantu population who have to be taught rapidly the fundamentals of intensive farming.

I have said several times before that this fundamental knowledge and the putting to use of it is inter-woven with tools provided by other sections of the private sector, Government agricultural policy and last but not least, the resources of agriculture themselves. In order to further its promotional aims, the Society has taken the following steps:—

1. The Society has become an institutional member of:
   i). The South African Society of Animal Production.
   ii). The Institute for Agricultural Extension.
   iii). The South African Grassland Society.
   iv). Die Landbou Ekonomiese Vereniging.

   The Society has also undertaken secretarial duties for the Institute for Agricultural Extension, the South African Society of Animal Production, and the Agricultural Veterinary Chemicals Association.

2. The Society has taken part in, and sponsored a Symposium on Communications.

3. The Society has pressed into use the following communication media:—
   i). The radio: two programmes have been broadcasted on the S.A.B.C. on the economic implications of fertilizer use.
   A series of 10 programmes has been prepared for Farmers Radio, mainly on researches on the industry and the results obtained.
   A series of 12 programmes on "Better Farming" have been compiled for Radio Bantu.
   ii). Publications: Supplements to coincide with the "Festival of the Soil" were published under the aegis of the Society by "Farmers Weekly" and "Die Lanbouweekblad".
   An illustrated brochure was compiled for the "Festival of the Soil' entitled "Do you know".
   A fortnightly series on "Soil and Plants" is being published as a feature in "The Farmers Weekly".
   A series reviewing and advising on maize production is being prepared.
   The Society will publish news letters which will be given a very wide circulation covering various topics.
   The FSSA will publish a journal for papers and act as a vehicle for dissemination for the mass of technology and research which is not receiving the publicity which it deserves.
   The Society will publish news-leters which for distribution in the Bantu areas.
   iii). Visual Aids: A slide library is being built up, available for general use, and the first two subjects to be covered will be "Maize Growing" and "Deficiency Symptoms in Maize".
   The Society has also produced at considerable cost an instructional film for Bantu agriculture, entitled "Food from Soil", in collaboration with the Transkei Department of Agriculture. This has been received with worldwide interest, and so far orders from Departments of Information and Bantu Affairs have amounted to 16 copies of the Zulu soundtrack and 33 copies of the original Xhosa. Overseas TV network interest has also been aroused in this film.

4. Practical demonstrations are being carried out by the Society, which we hope will encompass an extension campaign under the aegis of the Institute for Agricultural Extension. This has still to be considered by the relevant Government Departments. An annual Soil Fertility course is held at Tsolo, in collaboration with the Department of Agriculture of the Transkei, and demonstration plots are put down in the native areas. Tours by chiefs and headmen are arranged for the viewing and assessment of these, in order to add in the dissemination of the information these provide.
   The Society has continued with cultivar trials in conjunction with the Department of Agriculture, and has carried out joint fertilizer applications and demonstrations. The Society has also kept an active interest in soil testing, correlation of analysis and advisory service, and endeavoured to interest all concerned in rationalization in this sphere, which

may well lead to the establishment of a central laboratory for diagnostical analysis.

5. For the information of the Department of Industries, a comprehensive dossier on the fertilizer industry was prepared, highlighting the present state of the industry, its investment status, its production capacity, the effects of present policy on production, and the future of the industry.

6. On the domestic side — for good order and housekeeping, the Society has cooperated with Government Departments, correlating the interests of the industry to remove any partizan flavour in respect of:

   Railage rates and Insurances
   The Weights and Measures Act
   Price Determination
   Early Delivery Rebates
   Commission of Enquiry into Agriculture
   Control of Imports into South Africa
   Registration of Fertilizer Products

It is a sure sign of maturity of an industry to be able to discuss matters on an industry-wide scale with the Government. There are very gratifying signs of appreciation on the side of Government officials from many departments that a partizan approach by individual firms has been abandoned. The mature attitude of members working through the Society will undoubtedly rebound to their benefit. We make an appeal to those members of the industry who are not yet members of the Society, to earnestly consider the advantages which the Society can offer in all respects. We do not want to pressurize anybody into joining the Society, since it remains a free association dependant for its success entirely on the enthusiasm as well as integrity of its members.

The seeds of the future of the FSSA are sown in the current programme. This programme will be augmented by further programmes aimed at the promotion of fertilizer use as a necessity and as a powerful economic tool in the hands of the farmer. All fields possible and profitable will be exploited and all available communication media used.

We will widen our horizons and seek co-operation, by electing as honorary members authorities in other spheres of agriculture, and we will acknowledge and encourage endeavours in the service of agriculture by awards of recognition. We will organise, help to organise and offer our resources to study groups, simposia and intensive courses in collaboration with all who are interested.

My address to you has necessarily ranged widely and only touched lightly on many aspects. Some of the facts pertaining to our present conditions are known and have been stated before, others will be stated in later papers, which I do not want to anticipate in this session, but if the effect of today's meeting is only to disturb complacency and cause some thinking, it would have been well worth us gathering here.

I think I can conclude fittingly by quoting: "Kêrels daar is werk — laat ons saam inval".