

## OPENING ADDRESS / OPENINGSREDE

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In the three decades since the Second World War the agricultural industry in the Republic of South Africa has undergone a metamorphosis — a metamorphosis to which the fertilizer industry also made a very real contribution. All of us who are in close touch with agriculture are familiar with the facts of this metamorphosis and the role which the fertilizer industry played in that connection.

Although one is therefore sorely tempted on an occasion like this to expatiate on the role of the fertilizer industry and to bring it the praise it deserves, I do not wish to talk today about what is already in the past. I had rather the emphasis fell on the challenge of the future — the challenge that lies ahead in the next two to three decades. It is a challenge that faces the agricultural industry as a whole and together with that industry all the industries ancillary to it. Obviously this also includes the fertilizer industry and its organisations.

To do this I am obliged, to begin with, to refer briefly to a subject which is beginning to receive more and more attention all over the world. I refer to the race between population increase and food production — a race which, according to the forecasts of demographers and agriculturists, will be decided within the next quarter of this century.

The more optimistic forecasters give us time up to the end of the century before serious food crises may be expected; the pessimists expect such crises within the next decade already.

But whether the pessimists are right or whether the optimists are right makes little difference. The fact remains that, at the present trends of production on the one hand and the population growth on the other hand, the world is going to reach the stage in the near future where food production is going to lose the race against population growth.

It goes without saying that this food crisis can be averted only if one of the two trends can be changed — either population growth must slow down or the increase in food production will have to be speeded up.

There can be little doubt that the ultimate solution lies in the first of these alternatives. Man is coming to realise ever more clearly that the world's resources are not inexhaustible, and this realisation has already led to the heartening signs that measures are being applied in various countries to curb population growth. To give an example of this, I may refer to recent reports on legislation which has been announced in one of the states of India to limit the number of children per family to two. But it will take quite a time before orderly methods of stabilising population growth can be applied generally enough to have any significant effect on the global population growth.

Meanwhile, substantial population growth seems to be the inevitable prospect for the immediate future.

That is why people look to the agricultural industry to buy time, until this kind of measure can have an effect, by increasing production to such an extent that the threatening food crises may be averted.

And what applies to the world as a whole unfortunately applies to the Republic of South Africa and its neighbouring states as well. Although the Commission of Inquiry into Agriculture found that the physical volume of agricultural production in the Republic had so far increased at a faster rate than the population, there is little reason to find any comfort in this thought because:

Firstly, the findings of the Commission show that the physical volume of agricultural production for the decade 1951—1960 increased at a rate of 3,8 per cent per annum but that the rate fell to 2,9 per cent in the ensuing decade of 1960 to 1969. In other words, a mere 0,3 per cent higher than the rate of 2,6 per cent at which the population grew each year.

Secondly, it is expected that the population of the Republic will more or less have doubled by the year 2000 to reach the 50 million mark. Although the present production of food is more than enough for the present population, it will have to expand considerably if it has to meet the needs of 50 million people whose *per capita* requirements are also rising rapidly. Verbeek considers that the production will have to double in this period.

Thirdly, the Republic has relatively little high-potential crop land available. According to Verbeek we have about 0,57 ha of arable soil per head of population whereas it is estimated that 0,4 ha per person is necessary to produce enough food for everyone with the present technology. By the year 2000 the available land will only be 0,32 ha per person, in other words less than the required 0,4 ha.

It must therefore be abundantly clear that agriculture in the Republic of South Africa, and in her neighbour states, cannot escape the challenge which faces the world today — the challenge to increase production during the next quarter of this century to such an extent that the needs of the rapidly growing population can be met.

Faced as we are with this challenge, it is logical that we should investigate all the alternatives by means of which production can be increased. As I see it, there are basically two alternatives.

Firstly, by means of agricultural expansion, that is, by bringing more land into agricultural production. In some African states this may hold out distinct possibilities, but in the majority of cases very little additional land can be brought into production. Reserves of land which could be converted into highly productive arable land are likewise extremely limited.

In those countries where such reserves may well exist, their mobilisation would require immense inputs of capital, labour and know-how. Whether these inputs would be forthcoming remains to be seen, although this is of course part of the challenge of the day.

Considering all factors, it is doubtful if agricultural expansion in Southern Africa could make the contribution to increased production required to meet the needs. Nevertheless I would contend that, whatever the contribution that can be made by this means, it must enjoy high priority in all countries where it is feasible.

This leaves a second alternative to be explored, namely, to increase output per unit, that is, per hectare of cropland or pasture, or per head of livestock. This involves changes in crop or livestock management practices, or changes in the productive capacity of the land, or changes in the nature or quantity of farm inputs, or, perhaps more frequently, some combination of these.

In exploring this alternative it soon became clear to me that it in fact revolves around two important factors which to my mind deserve our particular attention:

Firstly, the improved and extended application of existing technology in all agricultural land.

Secondly, the development of new technology.

In considering the alternative of agricultural expansion, I have contended that it offers limited scope for achieving increased production. The question therefore arises as to whether or not the second alternative of increasing output per unit can make any better contribution.

Let us therefore consider first the possibility of achieving this objective by improving or extending the application of existing technology.

According to the latest data supplied by the Department of Agricultural Economics and Marketing, roughly one quarter of the farming units in the white areas of the Republic of South Africa produced 75 per cent of the total value of agricultural production in the Republic during 1974/75.

These farms occupy 50 per cent to 60 per cent of the total area of agricultural land. It is a simple matter to deduce from these data that the value of agricultural production could be considerably increased if the same level of technology, and of course management, were applied by the remaining 75 per cent of the farmers on the remaining 40 per cent to 50 per cent of the agricultural land. Percentage-wise, this could amount to an increase in excess

of 30 per cent on the present level of production which would, in terms of physical volume, make an appreciable contribution towards achieving the target of doubling production within the next 25 years.

I notice from the programme that the black homelands of the Republic are to figure prominently in your discussions at this conference. It is therefore fitting that the contribution which they can make should also be reviewed, all the more so because their inherent potential is perhaps even greater than that of the white areas. I say this for two reasons — firstly, on the average they have a more favourable rainfall. Secondly, their present level of production per unit is still lower than on the white farms, leaving more scope for improvement. To quote one example — during the very favourable 1972/73 crop year when the average yield of maize in the white areas amounted to 1 986 kg per ha, the average yield in the homelands was only 19 per cent of this figure, namely 382 kg per ha. On comparative potential, the yield per ha could have exceeded the yield in the white areas if the same average level of technology and management had been applied. Had it, however, been possible to achieve merely the same yield on the 850 000 ha planted to maize in the homelands, the total production of maize could have been increased by more than 1,3 million tonnes, representing an increase of some 15 per cent in the total maize crop for the Republic in that year. It must be obvious what the effect would have been if the same improvement could have been brought about on all the 2,2 million ha of arable land in the homelands.

What applies to maize applies equally to other agricultural products. Tomlinson estimates that the homelands represent about 25 per cent of the Republic's agricultural potential but that they in fact contribute only approximately 5 per cent of total production. Should they produce according to potential, an increase in total production to the order of more than 20 per cent could result.

Let us now also look at the second possibility, namely, to increase production by means of the development of new technology. In the nature of things, it is not possible in this case to make specific predictions in terms of percentages to the same extent as in the previous case, since technological break-throughs cannot be predicted. I shall therefore content myself with mentioning two aspects which, to my mind, are relevant in this connection.

The first aspect is that I am fully confident that South Africa's scientists will accept the challenge and be able to meet it. South Africa — and together with her, Southern Africa — has its own unique set of circumstances under which agriculture has to be practised. There is no dearth of problems and therefore there is ample opportunity for researchers to find fulfilment in their work. Over the years the Republic has built up an agricultural research system which compares well with the best in the world. It is a system, moreover, which is oriented to Southern

Africa and has a better grasp of the problem and opportunities in Southern Africa than any other system.

I am therefore convinced that in this field the scientists of South Africa are equal to their task and I can say this on the strength of their achievements of the past and not only out of loyalty.

The second important aspect which I should like to mention is that the need for research and new technology in the future should be seen in two clearly defined, although complementary, parts. In the first place, intensive research must be done in the field of the technical or specialised aspects of agricultural production — the development of new cultivars, new cultural practices, new criteria for fertilization, etc, and, last but not least, also new or improved systems of management. But the second part must not be neglected, and that is the development of new techniques for making farmers accept the changes in farming practices that are necessary to achieve higher production. We in Southern Africa are concerned with a variety of peoples to whom the new technology has to be brought home. Methods of doing this and systems by which this can be applied in practice within the framework of the given socio-economic situation have to be devised and developed.

What this amounts to, so far as I am concerned, is that in developing new technology in agriculture the one thing must be done and the other may not be left undone — we shall have to give attention to the technical or specialised aspects of agricultural production, but at the same time we must not lose sight of the role played by man in his special community context in agriculture.

To begin with I said that the agricultural industry, and together with it all the ancillary industries of which your organisation represents one group, is faced with a challenge. At this stage I do not wish to elaborate on the role that you can play in this regard in meeting the challenge — I

leave that to you to thrash out in the discussions that are to follow.

But I should like to conclude with one last thought which is relevant particularly to the services ancillary to agriculture. We concentrate so much on the changes that farmers have to introduce in order to achieve higher production through the application of improved, modern farming practices that we sometimes tend to forget that they are not the only ones who have to introduce changes. Particularly so far as the developing homelands and black states are concerned, commercial organisations must also investigate and introduce new techniques for the handling of the farming inputs which they supply; new patterns of central and decentralised testing of new products must be evolved; all organisations concerned must find new criteria for the determination of priorities; new habits of collaboration between disciplines, bodies and organisations must be formed; planners must learn that programmes should be developed that differ from one area to another for the same product, etc. We must realise that the role of the one organisation in the one part of the economic diversity of Southern Africa will differ from the same organisation's role in another part. The extension officer who has devoted himself to giving advice and persuading people in the more developed agriculture has to supplement his advice and persuasion with a variety of other functions in another area, even going so far as to become actively involved in the management of the enterprises of a farmer or a group of farmers for the sake of teaching them the techniques of management.

In saying this I actually want the accent to fall on the necessity of adaptability on the one hand and on the absolute necessity of co-operation and co-ordination between the efforts of all organisations concerned with agricultural development on the other hand, particularly as regards the development of less developed areas.

With these words go my best wishes for fruitful discussions at this meeting, which I hope will serve to promote understanding of the adjustments that are necessary and to take co-operation and co-ordination a step further.