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# Agrekon

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Editorial committee: Dr. C. van der Merwe (chairman), A.J. du Plessis (vice-chairman), Dr. F.R. Tomlinson, Dr. A.P. Scholtz, Dr. M.L. van As (technical editing), O.E. Burger and H.J. van Rensburg (editors)

Deserving articles in the field of agricultural economics, for publication in this journal, will be welcomed.

These articles should have a maximum length of 10 folio pages (including tables, graphs, etc.), typed in double spacing. All contributions should be submitted in triplicate to the editors, c.o. Department of Agricultural Economics and Marketing, Pretoria, and should be received by the editors at least one month prior to publication date.

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## Possible Adjustments in the Maize Industry

by A. P. Scholtz, Chief Professional Officer (Economics), Maize Control Board

### Introduction

In a previous article\* it was pointed out that the ever-widening gap between production and internal consumption held dangers of a crisis for the maize industry. Since then the following three important factors have come to the fore:

In the first instance it has become clear that the bumper crop of 1961/62 was not accidental, because it is estimated that the 1962/63 crop will be even bigger (the May, 1962 estimates of the Division of Economics and Markets put the crop at 53,500,000 bags whereas the Maize Board budgeted for a crop of 56,500,000 bags in March, 1962). As the use of hybrid seed increases and improved production techniques are more widely applied, the potential of the industry can still be considerably increased with the result that a 60,000,000 bag crop is quite within reach in normal circumstances.

Secondly, the Maize Board estimates that the total exportable surplus will amount to 28,400,000 bags in the new season, 23,000,000 bags of which will be of the 1962/63 crop. However, it will only be possible to export 22,000,000 bags during the season since the Railway Administration will not be able to move a larger quantity to the ports. Therefore, there will be a net increase in the carry-over stocks at the end of the season, despite a record export programme. If the crop and the export surplus were to increase further, the problem of accumulating surpluses may become an actual one in the near future.

Thirdly, the net producers' price for maize for the 1962/63 season was reduced by 27½c and 25c per bag for white and yellow maize respectively, mainly in view of the bumper crop expected. This represents a decrease of approximately 9% in comparison with the net price for 1961/62. This will probably cause many producers to reconsider their current production practices.

It is against this background that the question of adjustments within the industry should be considered.

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\*"The Maize Industry in South Africa - Danger Signals for the Future".  
Agrekon, Vol. 1, No. 1, January, 1962.

## Basic Nature of Adjustment

In the previous article it was pointed out that the internal consumption of maize was not likely to increase rapidly. Although there will no doubt be an increase in consumption in the long run, the rate of increase will be too slow to relieve the present situation significantly.

It was further pointed out that if the increase in production were to be disposed of overseas, the cost structure of the local industry would necessarily have to be lowered. Now, however, there is a great deal of uncertainty about the capacity of the Railways to handle a greater volume of maize for export, particularly if the country-wide campaign to expand South Africa's export trade during the next few years, is going to be reasonably successful. Even if the cost structure were lowered, it may prove impossible to export more than 25,000,000 bags of maize annually without providing additional transport facilities. This means that the maximum crop for which it will currently be possible to find an outlet, is approximately 56,000,000 bags.

The inevitable conclusion is that producers should, in their own interests, not further increase maize production during the next few years. Although the Maize Board and other interested parties should maintain their efforts to step up the future rate of increase in consumption in the long run, it will only be possible to bring about a healthy short-term balance between supply and total consumption by making adjustments on the production side.

The basic object of adjustments within the industry should be to increase or maintain the net income of producers within the broad framework of the national agricultural policy or, otherwise, to restrict unavoidable decreases in revenue to a minimum, in order to safeguard the economic survival of the producers. Here, action could be taken on two different levels, viz. the farming level where the individual producer acts within the limits set for him by legal, social and economic determinations over which he has no direct control, and the policy level where measures affecting the whole of the industry or the agricultural sector or the national economy, are discussed.

### MEASURES ON THE FARMING LEVEL

#### Increased Efficiency

The necessity for increased efficiency flows from the fact that, today, we are experiencing a period of tremendous technological advancement. Not only in the maize industry or in the agricultural sector, but throughout the field of economic activities, existing ideas are continually being changed owing to new techniques resulting from the technological revolution currently being experienced by the world. For the agricultural sector to keep pace with the development in other branches of the national economy and to maintain for itself a reasonable share of the national income, the productivity of individual production units must be increased.

The producer who increases his efficiency to a higher degree than the average increase for the industry as a whole, will naturally capture a greater share of the total revenue of the industry - irrespective of whether or not the total income as such increases. In the present circumstances, the producer who does not achieve greater efficiency will have a smaller share in the total revenue of the industry and his net revenue may decrease even if the total earnings of the industry were to increase.

A further consideration is that, even if increased efficiency in the form of a higher yield per morgen were to bring about a decrease in the cost structure, it cannot be accepted as a fact that the total net earnings of the producers as a group will be materially increased as a result. If the same area as before were to be planted to maize (as a cash crop), the crop will be proportionately bigger and the percentage of the crop to be exported, will also increase.

At present however, the net realisation on export maize is lower than that on sales on the local market with the result that the net producers' price, which is mainly determined by these values, will decrease accordingly (other factors remaining the same). The net proceeds of export maize per unit may even decrease, if a larger quantity than at present has to be disposed of on such a glutted world market. Moreover there is a possibility that, in view of physical limitations, it may not be possible to export the total export surplus, which would have a very depressing effect on the ultimate net realisation of the export surplus. The further the net producers' price drops as a result of increased production, the greater the lowering in production costs will have to be, in order still to achieve an increase in the total net earnings. Not only will the producer who wishes to increase his net revenue have to become more efficient, but even those who only wish to maintain their position in relation to other producers, will have to produce more efficiently.

It would appear, therefore, that the total net revenue of the industry will not necessarily be increased by greater efficiency, unless it is accompanied by a decrease in the area planted to maize. According to the present set-up the latter adjustment would have to be made mainly by the less efficient (or marginal) producers.

#### Reduction of Area planted to Maize

A reduction of the area under maize could be achieved in one or both of the following two ways:

(a) Partial Switch to other Cash Crops

In the maize producing areas there already is a number of other cash crops traditionally integrated in the broad agricultural pattern e.g. groundnuts, sunflowers, kaffir-corn, dried beans and winter wheat. Recently, summer wheat, soya beans and castor-oil seed have also become prominent.

Although physical factors such as soil, climate, cultivation practices, etc., will have an important effect, the economic factors of relative price/cost relationships will probably decide the question of whether or not a switch should be made to other cash

crops. In the latter connection the medium and long-term prospects of profitable outlets are of paramount importance. Present price/cost relationships may make such a switch profitable for some producers, but if, for example, the outlets are more limited than those for maize, the expansion of production might have adverse results.

Of the said products, summer wheat would seem to offer the best prospects. According to results thus far obtained with certain new varieties, summer wheat should do well in the Highveld Region. The Republic annually still imports from 750,000 to 1,000,000 bags of wheat and the long-term prospects of an increase in consumption are good. The per capita consumption of a large section of the population is still well below normal and consumption by Bantus in particular can be expected to increase much more rapidly than the rate of population growth will increase. To a certain extent the area under summer wheat may only replace that already planted to winter wheat in the maize area, but it is possible that summer wheat produced in the interior may have a competitive advantage over wheat produced in the Western Province.

In the case of groundnuts and sunflower seed, the present volume of production jointly is more than adequate to meet the internal requirements. A considerable portion of the crop is already being exported as graded edible nuts and oil. Competition is keen on the overseas market, but if more efficient production methods were also in this instance to result in higher average yields and especially in an increase in the production of high quality nuts, it should nevertheless be possible to dispose of an increased production on the overseas market at reasonable prices.

Previous experiments with soya beans and castor-oil seed did not prove very successful, but the new types seem to be much more suited to local conditions. If this is indeed the case and regular good yields can be obtained at reasonable cost levels, these products may hold promise as profitable alternatives. Recent world market prices for soya beans have been profitable because China, who was a large exporter, did not have stocks available for export during the past year. In America the cultivation of soya beans as alternative to feed grains was encouraged and production showed a great increase. It would therefore be very advisable to investigate carefully the medium and long-term prospects on the overseas market before any conclusion is drawn.

As far as kaffircorn is concerned, the price relationship with maize is particularly favourable this year - especially in areas where yields have been reasonably good. However, the local market for kaffircorn is still limited to the malting industry, and it is extremely doubtful whether kaffircorn as a stock-feed will ever enjoy a large demand unless the selling price is fixed well below that of maize. The overseas prices for kaffircorn are normally lower than those for maize with the result that a realistic price adjustment can be expected if production increases to an appreciable extent. The Maize Board has already issued a warning to producers in this regard.

The internal market for dried beans is also very limited. Production, especially of dried beans of good quality, is inconstant. Although, owing to a small crop, prices are better this year than they were last year, the production in normal years is already sufficient for the local market. In the past, the Dried Bean Board's net realisation on

sales for export have been appreciably lower than the local floor price and, as a general alternative to maize, dried beans do not hold much promise in the present circumstances.

The producer's decision in this regard could be facilitated, if the Department of Agriculture, in collaboration with the control boards concerned, were to make available to maize producers an authoritative survey of the technical and economic possibilities of the cultivation of alternative cash crops.

(b) Reduction of area under cash crops

Should it appear that there are no suitable alternative cash crops than can be grown in the place of maize, the producer may yet be able to increase his net income by decreasing the area under cultivation. This would be possible particularly in two situations, viz. -

- (i) Where a producer currently operates on such a large scale that his efficiency level is adversely affected as a result of management and/or capital limitations; and
- (ii) Where lands are cultivated which, inherently, are of much poorer quality than the rest. In this case it would probably pay the producer to withdraw such lands from production and to concentrate the other production factors (such as labour and capital) on the better lands where it might probably be easier to achieve the potential of increased efficiency.

Effective integration of the animal factor

A large percentage of the country's animal population is found in the maize producing area. Admittedly most branches of the stock farming industry are today faced with practically the same problems - meat, dairy products and eggs are all overproduced at low producers' prices. However, two considerations are of importance here:

In the first instance it is possible that on many farms the animal factor has not received the necessary attention from a management point of view. If this is not the case, one cannot explain the low average milk production per cow, the low reproduction figure, etc. Intensified management in respect of the herd and judicious planning of activities in this regard could contribute much to the achievement of higher efficiency.

Many farms are not arable in their entirety, with the result that some branch or other of the stock farming industry has to be practised. It might be possible to compensate for any decrease in the profitability of cash crop cultivation as a result of falling prices, by placing the production of cash crops as well as feed crops on a more efficient level and by ensuring efficient utilisation of the feed crops by means of improved management.

Secondly, an increase in the number of wool sheep on suitable farms in the Highveld Region might become an important factor in the maintenance and/or improvement of the income position. The Maize Board, the Wool Board and the Department of Agricultural Technical Services are at present considering large-scale experiments to



determine the profitability of supplementary feeding of wool sheep during the winter months in the Grassveld regions. In view of the recent announcement that the world production of wool will have to be increased appreciably in the future to keep pace with the increase in consumption, success with the said experiments could provide farmers in the cropping areas with a valuable additional source of income. Incidentally, it might also stimulate the local consumption of maize.

### Farming records

The economic planning of farming units becomes of particular importance in the present circumstances. In order to be able to determine the most suitable adjustment possibilities for the individual unit, producers will have to have a thorough knowledge of the financial aspect of their farming enterprises. Much is already being done in this regard by the Department of Agricultural Economics and Marketing and a well-designed system of farming records has been developed for use in various types of farming.

## MEASURES OF A GENERAL NATURE

The measures discussed here do not all relate directly to the maize industry, but they do have a bearing on the circumstances in which adjustments will have to be effected on the farming level.

### Price Policy

In a free or semi-free economy prices perform a number of functions. Three of these are of importance in this discussion, viz. -

- (a) they direct the employment of the various production factors;
- (b) they direct the disposal of the goods produced by the economy; and
- (c) they determine the distribution of the total income amongst the different members of the community.

In ideal circumstances the price system is self-correcting and the situation stable. For example, an excessive price for the end product results in the flow of production factors to that branch; on the one hand, this leads to an increase in the production of the end product with a resultant drop in the price unless the demand is unlimited; on the other hand, it results in an increased remuneration to the required production factors in order to draw them to the industry concerned. The net result is that the profitability of production in the industry concerned decreases to the level where a further expansion would no longer be profitable and an equilibrium is reached where the supply is just sufficient to satisfy the demand at the particular price.

Especially in agriculture the practical reality, however, differs widely from the ideal situation and wide fluctuations in demand and supply have resulted in instability both with regard to prices and total income. Mainly as a result of this the State, in countries with capitalist economies, has intervened in the operation of the price system to a more important extent in the case of agriculture than in the case of the other sec-

tors of the economy. The object of such intervention was mainly to eliminate the defects in the operation of the price system; the basic economic functions of price therefore still remain effective also in respect of "fixed prices".

For this reason it is essential that the price policy of a controlling body such as the Maize Board should be realistic and take account of the basic circumstances in respect of supply and demand. Prices cannot be artificially kept at a high level for an indefinite period because such a procedure would encourage production on the one hand and/or discourage consumption on the other hand, thus resulting in surpluses.

The long-term tendency in prices in particular should be such as to promote the maintenance of a balance between supply and demand. Deviations from this pattern will be essential at times owing to short-term disruptions, but they should only be of a temporary nature and producers should not be left under any illusions as to the causes and the duration of such short-term price deviations.

As regards the long term, two considerations in particular are prominent at present:

In the first instance it is anticipated that the increase in productivity will be maintained and that it will probably result in a further increase in production in the near future. Should it really prove impossible to export the total surplus, consideration will have to be given to measures to retard the rate of increase, e.g. by effecting further downward adjustments in producers' prices.

Secondly there is the fact that future increases in the internal consumption can be expected mainly in the use of maize as stock feed. In the past price relationships between maize and meat and dairy and poultry products were evidently not conducive to an increase in the demand for maize as stock feed. A gradual decrease in the Board's selling prices may in the long run result in a better price relationship and bring about a permanent increase in the consumption of maize. Increased efficiency in the live-stock sector, coupled with a lowering of the selling prices of maize, may pave the way to a reduction in the consumers' price of the animal products. This could accelerate the rate of increase in consumption of the latter products, which would necessitate an increase in their production and which might stimulate the consumption of maize. An artificial increase in the prices of meat, etc., in order to bring about a higher consumption of maize, would not seem to be realistic.

Although prices play an important rôle, their ability to promote adjustments between supply and demand is definitely limited. A great deal of misunderstanding would seem to exist in regard to the rôle played by prices in the distribution of revenue amongst producers. A distinction should be made between the functional distribution, which is determined by the price relationships between the different production factors such as labour and capital, and the personal distribution which is determined by the functional distribution and the distribution of control over the production factors. If there is a very uneven personal distribution of income within the industry as a result of the fact that control of the production factors employed is concentrated mainly in the hands of a few persons, the situation cannot be rectified simply by manipulating the price of the end product.

### Promotion of internal and overseas disposal

Although it is foreseen that the short-term adjustments will have to be effected on the production side, it is essential that, apart from price measures, the present efforts to promote the internal consumption and overseas disposal of maize should be maintained. These include, inter alia, the endeavour to find alternative, economic uses for maize, to improve the local distribution where possible and to maintain an active interest in developments on the overseas markets.

Furthermore the provision of additional transport facilities for export maize by the Railways Administration will contribute much towards relieving the situation, particularly if increased efficiency should improve our competitive position overseas.

### Modified system of control

In recent times the introduction of a different system of control has often been advocated and the alternative discussed most, is a quota system. Most suggestions are vague about the particulars of such a system, but it would seem that they generally aim at adjusting the personal distribution of income within the maize industry in favour of the smaller farmer.

This object could be achieved in two ways. In the first instance it could be achieved by limiting the quotas and the fixed price to the quantity required for the local market and by allotting to the group of relatively small producers a larger share of the quotas than the percentage which their sales currently represent of the total quantity marketed by producers. Once that has been done, a total prohibition on marketing above the quota quantity could be imposed, or an export pool could be operated for the quantities not covered by quotas. Secondly, the quotas could be coupled with a system of varying net prices which would decrease as the total quantity marketed by the producer increases.

It is not impossible to work out on paper a quota system which would achieve its object. The great problem would be encountered in the practical application of the system. Comprehensive supervision would be necessary if the quotas are not transferable or negotiable and, should they be negotiable, it is not unlikely that the "barons" will eventually acquire additional quotas for quite considerable quantities.

The disadvantages of a quota system may be summarised as follows:

- (a) it deprives the individual producer of a great measure of freedom of action;
- (b) it may encourage inefficient production by keeping uneconomic units in the industry, where in the long run it would have been better had they disappeared;
- (c) it may keep internal prices at higher levels than are justified by the actual circumstances, thereby delaying or completely preventing an increase in consumption;
- (d) should the difference between the quota price and the export pool realisation be wide (as present circumstances would seem to indicate), persons might easily be encouraged to engage in illegal practices. Stricter supervision would in any

case be necessary for the effective application of the system and the costs of control would increase considerably.

Before a quota system is introduced, clarity will have to be obtained in regard of the following questions:

- (i) whether the personal distribution of income within the industry really is as unfair as is maintained;
- (ii) whether it is in the interest of the industry to keep the majority of the small farmers in the industry; and
- (iii) whether a quota system is the most suitable and cheapest manner in which a redistribution can be achieved, if this is necessary.

#### Elimination of too small production units

An approach which is currently being investigated by the authorities and which could make an important contribution towards the solution of problems in regard to the personal distribution of income, is to find measures whereby the creation of too small production units can be prevented, and the elimination of such units already in existence can be encouraged. Possible steps in this direction are restrictions on the subdivision of land, preferential treatment in capital provision by the Land Bank when the consolidation of too small units is envisaged and support measures to facilitate the resettlement of persons now operating on too small units - for example the training of adults to qualify for vocations outside agriculture, financial contributions until such time as the family has a new source of income and can continue independently, special old age pensions to elderly people who would have no other source of income if they were to leave the farm.

Measures of this nature would therefore have as main object the improvement of the personal distribution of income by reducing the number of "small producers".

#### Efficient research, extension and information services by the State

Admittedly it is the responsibility of the individual producer to determine which products and what quantity of each he should produce and how he should employ the production factors at his disposal to achieve the best results as regards both production and disposal. Some of the information required, he can obtain from records of the past or by testing new trends in practice. Basic and even applied research can, however, be undertaken much more effectively by the State and other research institutes.

Technical research has made great progress, but it would seem that economic research did not receive the same attention, although greater efforts have lately been made in this field. Not only is it essential that the producer should have information on technical production co-efficients and mutual price and cost relationships based on the latest indices, but there seems to be a great need of something similar to the American "Outlook Studies". A picture should systematically be presented of the production, consumption and price prospects of the individual products, both for the short and the long term. Attempts should be made to obtain and publish more information

about the producers' production plans for the immediate future. Although these advance estimates are often not correct, they give an indication of the latest trends and the in-accuracy is probably partly owing to the fact that many producers modify their plans after having learnt the intentions of the group as a whole.

Macro-economic analyses is a field of study which has thus far received little attention in South Africa and it could make an important contribution to the planning of long-term adjustments. Economic interpretation and synthesis of the possibilities for the various branches of crop farming, animal husbandry, etc., would represent an important addition to existing knowledge. This will definitely be of great value to the policy makers. However, the most important use of such knowledge would probably be to direct the guiding and planning work on the farming level.

The essence of the problem of keeping the various agricultural industries and the agricultural sector as such economically sound, lies in keeping the individual farming units healthy. For this reason it is absolutely essential that the results of research in the different fields, and information concerning prices, markets, etc., should be conveyed to the farmers as efficiently as possible, whilst the practical application of such information should be stimulated by guidance and farm planning.

#### GENERAL ECONOMIC PROGRESS

In a developing country such as South Africa it is essential to maintain a reasonable rate of economic growth. Temporary recessions are often keenly felt by agriculture as the provider of primary products. General measures for the promotion of economic development and the improvement of living standards for the people in general, contribute to the expansion of the market for agricultural products; especially in South Africa this could make a great contribution towards the maintenance of a healthy agricultural sector and the safeguarding of the economic survival of the farmer.

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#### THE FARMER HAS NO CHOICE

The paramount agricultural problem of our time is that of depressed farm incomes in a period of rapid economic development and high levels of employment. Excess productive capacity, generated by output-increasing technology and inelastic markets, continues to create chronic, price-depressing surpluses which tend to transfer to others the benefits of agriculture's increasing efficiency. Yet the farmer has no choice. If he is going to stay in this competitive business of farming, he needs to adopt the techniques that will help him maintain his income by reducing unit costs or increasing his volume of business - even though ultimately these same innovations intensify the woes of agriculture by adding still more to troublesome surpluses.

- H. L. Stewart, Agricultural Research Station, U.S.D.A.