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DEPARTMENT OF AGRICULTURE.

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# A REVIEW OF THE MAIZE SITUATION

— IN THE —

## UNION OF SOUTH AFRICA.

BY

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## FOREWORD.

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THE problems connected with maize production and marketing are undoubtedly both serious and far reaching and the present seems an opportune time to take stock of the situation.

In the accompanying memorandum an attempt is made to portray the Union position, the production of other maize-producing countries, and the results of marketing through voluntary co-operative channels.

During the past few months numerous schemes have been advanced for improving maize prices; such as export bounties, subsidies, price fixing and compulsory control, and it was thought advisable to include a survey of schemes of a like nature attempted in other countries; and in some cases an analysis of the probable effects if similar efforts were made in the Union.

In addition to Dr. J. C. Neethling, whose report has been extensively quoted, the writer is indebted to Mr. W. A. Horrocks, in charge of the Statistical Section of the Division of Economics, for his assistance in the preparation of the bulletin.

W. J. LAMONT,

Chief, Division of Economics and Markets.

Pretoria, 2nd April, 1931.

## CHAPTER I.

### THE MAIZE SITUATION.

Maize is one of the most important agricultural crops of the Union, both in respect of the quantity used for feeding purposes—human and animal—and in respect of its total cash value to the producer.

Prior to the depression period which we are now experiencing, the maize crop had, depending on the nature of the season, a value of anything between £6,000,000 and £10,000,000 per annum.

#### DISTRIBUTION OF PRODUCTION.

While maize is produced over a very wide area in the Union, the main contributor to the annual production is that portion of the Transvaal and Orange Free State which has come to be known as the maize triangle. The Transvaal and Orange Free State provinces together produce on an average 82.3 per cent. of the total maize annually grown in the Union on European farms. Natal contributes 12.2 per cent., and the Cape 5.5 per cent. of the total.

The concentration of maize production within the maize triangle is well shown by the following statement of the percentages of the average annual crop of the province produced in the seven chief maize districts of the Transvaal and Orange Free State (European farms only).

<i>Transvaal.</i>	%	<i>Orange Free State.</i>	%
Bethal.....	12.30	Kroonstad.....	15.3
Standerton.....	10.8	Bethlehem.....	9.1
Heidelberg.....	9.7	Frankfort.....	8.9
Potchefstroom.....	9.7	Senekal.....	8.6
Lichtenburg.....	8.5	Heilbron.....	8.4
Middelburg.....	8.3	Reitz.....	7.2
Pretoria.....	5.7	Lindley.....	6.6
Other.....	35.0	Other.....	35.9
<b>TOTAL.....</b>	<b>100.0 %</b>	<b>TOTAL.....</b>	<b>100.0 %</b>

These are the averages of 10 years' production. The significance of these figures will be understood in the light of the statement above that 82.3 per cent. of the total annual crop comes from the combined Transvaal and Free State Provinces. The elevator system is distributed almost entirely over the area represented by the districts showing the largest annual production.

During the past five years maize production has remained fairly stationary with one very small crop only in the 1925-26 season.

TABLE I.

Table showing maize production, export and quantity retained for consumption 1924-25 to 1928-29.

Harvest Year.	Production. Bags of 200 lb.	Export (Year following Harvest).	Retained for Consumption.
1924-25.....	24,295,581	11,457,192	12,833,389
1925-26.....	10,919,917	599,507	10,320,410
1926-27.....	18,256,898	6,625,280	11,631,618
1927-28.....	19,186,357	7,810,354	11,376,003
1928-29.....	18,690,772	5,801,599	12,889,173
1929-30.....	22,507,155	6,454,750*	—

\* 10 months only.

The point to which attention is directed in the above table is the stationary nature of the Union's annual consumption of maize. The figures would seem to indicate that there has not been any increased utilization of maize for stock feeding purposes, but that the quantity retained is largely used for human consumption. In view of the fact that changes in the farm organization are not effected in a short period it is difficult to estimate what effect reduced maize prices would have on local consumption or at what point in the price levels a greater utilization of maize for stock-feeding purposes would be accomplished. Naturally this is affected by the prices obtainable for livestock products. As things are at present it is inevitable that the farmer must look to the overseas market for the disposal of surplus maize, above the normal requirements of the country.

The overseas market is at the present time faced with surpluses of feeding stuffs of all descriptions and seriously reduced prices of practically all commodities, and maize is being sold at from 14s. 6d. to 16s. 6d. per 480 lb. (6s. 0½d. to 6s. 10½d. per bag of 200 lb.) with negligible advances for future delivery. Export costs and other charges give a local parity of approximately 3s. 3d. per bag at the oversea prices quoted.

It is, of course, impossible to say how long these low prices will rule on the oversea market. There are no immediate indicators of any increase at any rate for the next two or three months. From the first maize estimate figures for the coming season it seems certain that there will be an exportable surplus, though this will probably not exceed four to five million bags. At present ruling prices the Union can hardly afford, and is not likely, to export maize unless forced to do so.

The following table shows the average prices for bagged and elevator maize in the Union during the past six years. The prices for bagged maize are f.o.r. sender's station. Grade 2 has been selected as representative of the general trend of prices for all grades.

TABLE II.

MAIZE, GRADE 2.—MONTHLY AVERAGE PRICES PER BAG OF 200 LB.  
*Bagged.*

Month.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.
January.....	18/1	14/8	11/6	16/2	12/-	14/7	8/8	8/-
February.....	15/4	14/-	11/6	15/-	11/9	14/-	8/3	7/2
March.....	12/11	13/11	10/2	15/6	13/7	13/3	8/2	—
April.....	11/6	15/-	10/5	17/6	13/4	13/-	9/3	—
May.....	11/5	14/2	10/1	12/8	12/5	11/9	7/8	—
June.....	11/7	11/3	10/11	11/1	11/7	11/6	6/11	—
July.....	13/2	11/1	12/4	10/8	12/1	11/8	6/8	—
August.....	14/9	11/1	13/5	10/11	11/7	11/4	6/6	—
September.....	15/5	10/1	13/2	10/8	11/4	11/6	6/2	—
October.....	15/4	9/9	13/8	10/8	12/8	11/3	6/-	—
November.....	14/10	10/1	14/6	11/2	14/1	10/7	6/2	—
December.....	14/5	11/7	16/4	12/-	14/1	10/2	7/10	—

*Ex Elevator.*

Month.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.
January.....	—	14/1	11/-	15/4	11/3	13/7	8/-	7/5
February.....	—	14/-	11/-	14/-	10/10	13/1	7/6	6/6
March.....	—	13/-	9/8	14/11	13/4	12/2	7/4	—
April.....	—	13/11	9/6	16/10	12/4	11/10	8/8	—
May.....	—	13/3	9/-	11/11	11/10	11/6	6/11	—
June.....	—	10/9	10/3	11/3	11/2	11/4	6/5	—
July.....	—	10/7	11/8	10/4	11/8	11/7	6/3	—
August.....	—	10/7	12/10	10/5	11/4	11/2	6/4	—
September.....	15/-	10/-	12/9	10/3	11/-	11/2	5/8	—
October.....	15/-	9/3	13/4	10/3	11/10	10/8	5/1	—
November.....	14/2	9/9	14/-	10/6	13/1	9/7	5/6	—
December.....	13/9	11/-	15/10	11/2	13/1	9/3	7/3	—

### WORLD'S TRADE IN MAIZE.

According to recent information supplied by the International Institute of Agriculture, Rome, the world production of maize during the last four years was as follows:—

1929-30.....	1,243,195,000 bags of 200 lb.
1928-29.....	1,923,082,000 " "
1927-28.....	1,221,199,000 " "
1926-27.....	1,250,022,000 " "
Average 1922-23 to 1928-29.....	1,208,000,000 " "

The average exports to importing countries over the same period were 84,000,000 bags or only 7 per cent. of the total world production. As production of maize is subject to fairly wide variations,

it is obvious that a relatively small increase in production would yield a surplus considerably above the normal requirements of importing countries.

To facilitate an analysis of the position, Table III is attached which shows that relatively few countries produce maize in large quantities, while only Argentine, the United States of America, the Danubian States, the Union of South Africa, and Russia appear as important exporting countries. Outside the United Kingdom and Europe there is no country importing considerable quantities of maize that would tend to influence the international trade in this commodity.

It should also be noted that the production of primary agricultural commodities in all countries outside Europe received an enormous stimulus as a result of the disorganized state of agriculture in Europe following the Great War. As conditions in Europe gradually approached normal the demand for foreign feeding stuffs diminished proportionately, with the result that the United States of America ceased producing for export to Europe as early as 1922, when her last large shipments totalled 46,000,000 bags. The present position, therefore, is that although the United States produce 64 per cent. of the world's total production she has ceased to be an influential factor on the international maize market.

European countries have meanwhile developed their own primary industries to such an extent that they are finding great difficulty in disposing of their surpluses within their own borders. To meet these difficulties various measures have been adopted or proposed to protect their national interests.

Germany has fixed the price of maize at a level that would tend to restrict its use considerably, France has increased her import duties on maize from 10 to 24 francs per 100 kilograms, while many other European States have adopted various measures of control in the interests of their own producers.

The problem confronting the exporter of maize is therefore an increased production and a decreasing demand in Europe. It is these factors which have contributed to the present extraordinary low level of values.

## MAIZE STATISTICS OF THE PRINCIPAL PRODUCING COUNTRIES.

### *The United States of America.*

The production of maize in the United States of America represents approximately 64 per cent. of the total world production, but as producers in the United States have a very large home market the supplies there have ceased to be an important factor on the European market. A study of the table of production and exports given below confirms this opinion, especially as the exports in the past do not appear to have any direct relationship to the production. It is, nevertheless, apparent that the United States' production is gradually decreasing.

TABLE III.

*The World's Maize Trade.*

Averages based on the seven-year period, 1922-1928.

Country.	Production. Bags 200 lb.	Imports. Bags 200 lb.	Exports. Bags 200 lb.	Consumption. Bags 200 lb.
<i>Exporting Countries.</i>	1000's.	1000's.	1000's.	1000's.
Argentina.....	68,894	—	51,850	17,044
United States.....	776,853	505	12,267	765,091
Danubian States.....	101,973	223	9,953	92,243
Union of South Africa..	14,781	—	3,981	10,800
Russia.....	39,180	461	1,621	38,020
<b>TOTAL.....</b>	<b>1,001,661</b>	<b>1,189</b>	<b>79,672</b>	<b>923,198</b>
<i>Importing Countries.</i>				
United Kingdom.....	—	18,826	535	18,291
Holland.....	—	10,964	112	10,852
Germany.....	—	10,077	—	10,077
France.....	4,529	7,429	649	11,309
Belgium.....	—	5,923	105	5,818
Denmark.....	—	5,628	—	5,628
Italy.....	25,841	4,823	60	30,604
Spain.....	6,819	3,950	—	10,769
Irish Free State.....	—	3,533	—	3,533
Canada.....	2,544	3,255	4	5,795
Switzerland.....	3,872	1,485	—	5,357
Sweden.....	—	1,215	—	1,215
Norway.....	—	1,085	—	1,085
Portugal.....	3,894	784	—	4,678
<b>TOTAL.....</b>	<b>47,499</b>	<b>78,977</b>	<b>1,465</b>	<b>125,011</b>
<i>Other Countries.</i>				
Brazil.....	40,264	—	98	40,166
India.....	22,111	—	228	21,883
Egypt.....	20,726	30	14	20,742
Dutch East India.....	17,907	—	805	17,102
Philippine Islands.....	4,889	—	—	4,889
Australia.....	2,318	261	124	2,455
Greece.....	2,181	223	—	2,404
Indo-China.....	2,362	—	704	1,658
Uruguay.....	1,529	126	16	1,639
Poland.....	1,070	443	9	1,504
Morocco.....	1,310	—	74	1,236
Japan.....	967	191	—	1,148
Southern Rhodesia.....	1,214	—	420	794
Chili.....	483	—	—	483
Others.....	39,302	2,189	—	41,491
<b>TOTAL.....</b>	<b>188,623</b>	<b>3,463</b>	<b>2,492</b>	<b>189,594</b>
<b>WORLD TOTAL.....</b>	<b>1,207,903</b>	<b>83,629</b>	<b>83,629</b>	<b>1,207,903</b>

*Argentine.*

Date of Harvest.	Area Harvested.	Yield per Morgen.	Total Production.	Average Requirements.	Surplus.	Exports.
April	Morgen.	200 lb.	Bags 200 lb.	Bags 200 lb.	Bags 200 lb.	Bags 200 lb.
1923.....	3,709,000	13-29	49,309,000	17,044,000	32,000,000	32,493,600
1924.....	4,010,900	19-32	77,492,000	17,044,000	60,448,000	49,906,000
1925.....	4,328,800	12-05	52,164,000	17,044,000	35,120,000	32,369,000
1926.....	4,552,000	19-78	90,059,000	17,044,000	73,015,000	54,120,000
1927.....	4,280,883	20-99	89,838,000	17,044,000	72,794,000	92,016,000
1928.....	4,159,082	20-58	85,595,000	17,044,000	68,551,000	71,496,000
1929.....	4,107,647	15-79	64,877,000	17,044,000	47,833,000	57,937,000
1930.....	4,640,000	20-00	92,800,000	17,044,000	76,000,000	—

*Danubian States.*

Date of Harvest.	Production.	Normal Requirements.	Surplus.	Exports (Year following Harvest).
October				
1923.....	89,959,000	92,243,000	— 2,284,000	10,243,000
1924.....	116,955,000	92,243,000	24,712,000	15,072,000
1925.....	124,153,000	92,243,000	31,910,000	14,628,000
1926.....	135,040,000	92,243,000	42,797,000	16,356,000
1927.....	91,444,000	92,243,000	— 799,000	871,000
1928.....	73,086,000	92,243,000	— 19,159,000	312,000
1929.....	147,704,000	92,243,000	55,461,000	4,056,000*

\* Exports to 5th March.

*United States of America.*

Date of Harvest.	Production.	Normal Requirements.	Surplus.	Exports (Year following Harvest)
October				
1923.....	854,984,000	765,091,000	89,893,000	5,136,000
1924.....	647,560,000	765,091,000	— 117,531,000	3,576,000
1925.....	816,738,000	765,091,000	51,647,000	6,149,000
1926.....	753,814,000	765,091,000	— 11,277,000	3,761,000
1927.....	773,656,000	765,091,000	8,565,000	7,224,000
1928.....	795,184,000	765,091,000	30,093,000	7,476,000
1929.....	734,213,000	765,091,000	— 30,878,000	233,000*

\* Exports to 8th March.

The causes of the decrease cannot, however, only be attributed to decreased exports of maize, but perhaps also to decreased exports of other secondary agricultural produce, such as bacon and other



meat products, and the extraordinary prosperity of United States industry in recent years. The production and exports of the United States were as follows:—

TABLE IV.

*United States Production: Surplus and Export of Maize.*

	Production.	Surplus.	Exports (Year following Harvest).
October	1000's of Bags.	1000's of Bags.	1000's of Bags.
1920.....	898,404	133,313	36,120
1921.....	859,200	94,109	45,840
1922.....	813,666	48,595	14,184
1923.....	854,996	89,905	5,136
1924.....	846,636	— 118,455	3,576
1925.....	816,510	51,419	6,149
1926.....	753,629	— 11,462	3,761
1927.....	773,666	8,575	7,224
1928.....	789,292	24,201	8,916
1929.....	734,213	— 30,878	605
1930.....	573,157	191,934	—

*Argentina.*—In so far as Argentina is concerned it at once becomes obvious from a casual glance at her production that she is the only large producer of maize who grows principally for the export market. The production surpluses and exports are given below. If prices played an important part in the determination of her export it would have been impossible for her exports to have followed the surpluses so closely. It may therefore be concluded that Argentina has found the European market remunerative, certainly more remunerative than has been the case with the United States or the Danubian countries.

It is also noted that in view of the continued decrease in consumption of foreign feeding stuffs in Europe, Argentina's production is closely approaching that point where it will be more than sufficient to meet the demand of the maize-importing countries.

Argentina to-day is continuing production despite the ravages of the depression, quite conscious of the fact that she will be able to stand the competition of other producers. "The grain will be handed over for the best price the buyers are willing to pay. Argentina's hope and need is that the buyer will pay an honest price. But whether the price is an honest or dishonest price, Argentina will accept it, since necessity knows no law and the industry is not—it may be fortunate under the circumstances—in a position to hold up supplies in any studied attempt to dictate terms. It would appear that the recovery of an honest price is only achievable through a process of elimination."

With these facts before the South African farmer it would appear that the only reasonable question to ask is whether Argentina will in future be able to sell maize at a price ruinous to our producer in which case we would cease to function as a supplier of maize to the international market.

Unfortunately exact information is not available regarding the production costs in both countries, but we are able to form some idea of the net returns per morgen cultivated in each. Argentina's average yields approximates 19 bags per morgen. The Union's highest average yield was 7.58 bags in 1925. On this basis, assuming the costs of transport to be the same, the farmer in Argentina would receive £2. 19s. 4d. net per morgen cultivated compared with £1. 3s. 8d. in the Union.

The production and exports in Argentina have been as follows:—

TABLE V.

Date of Harvest.	Area Harvested.	Yield per Morgen.	Total Production.	Surplus	Exports.
April					
1923.....	3,709,000	13.29	49,309,000	32,265,000	32,493,600
1924.....	4,010,900	19.32	77,492,000	60,448,000	49,906,000
1925.....	4,328,800	12.05	52,164,000	35,120,000	32,369,000
1926.....	4,552,000	19.78	90,059,000	73,015,000	54,120,000
1927.....	4,280,883	20.99	89,838,000	72,794,000	92,016,000
1928.....	4,159,082	20.58	85,595,000	68,551,000	71,496,000
1929.....	4,107,647	15.79	64,877,000	47,833,000	57,937,000
1930.....	4,558,790	15.30	69,764,000	52,720,000	50,207,000*

\* 11 months.

Both official and unofficial opinions confirm the belief that Argentina will this season have an exportable surplus of 7,000,000 tons of maize.

*Danubian States.*—Although the Danubian States have at times figured as important maize exporters, there is no doubt that their position is similar to the United States in that they enjoy a fairly substantial home market. What the ultimate effect of the present low price level on Eastern European agriculture will be is difficult to say, as it appears that the peasants there are finding less difficulty in growing maize than in weathering the financial storm. The crop last October again returned a fair surplus in spite of the extraordinary crop of 1929 which could not be marketed profitably outside their own territories and had consequently to be dumped on their own markets.

This varying consumption on the Danube seems to lend colour to the fact that at whatever price maize is being sold in other European countries, it is more profitable for the Danubian farmer to utilize his maize for his own feeding and perhaps export in the form of meat, than to export the grain to neighbouring territories for the same purpose.

The Danubian production although not directly entering the markets of importing countries will, therefore, continue to have a very important effect on maize prices even though that effect be indirect. It is also noted that good maize crops on the Danube are invariably followed by excellent crops of other feeding grains which also tend further to decrease the demand for maize.

A recovery in prices can therefore not be expected unless the crops in Eastern Europe are materially reduced. This reduction may result from bad seasons, which would only promote temporary improvement, or from a permanent decrease in production. This permanent decrease in production is not altogether unlikely as it is regularly reported that at present prices the Balkans are unable to continue and are facing economic disaster.

The production in Eastern Europe has been as follows:—

TABLE VI.

	Production.	Surplus.	Exports (Year following Harvest).
October			
1923.....	89,959,000	— 2,284,000	10,243,000
1924.....	116,955,000	24,712,000	15,072,000
1925.....	124,153,000	31,910,000	14,628,000
1926.....	135,040,000	42,797,000	16,356,000
1927.....	91,444,000	— 799,000	871,000
1928.....	73,086,000	— 19,159,000	312,000
1929.....	150,097,000	57,854,000	14,021,000
1930.....	109,836,000	17,593,000	—

## CHAPTER II.

## CO-OPERATIVE MAIZE MARKETING IN THE UNION.

The marketing of maize through co-operative channels has in recent years received a great deal of attention. Efforts have been made to secure the sale of a much larger percentage through co-operative agencies, while more recently there has been considerable discussion of the advisability of applying Section 17 of Act No. 38 of 1925 making the sale of maize through one channel compulsory.

There are at the present moment 18 co-operative maize selling organizations registered in the Union, of which 17 are members of the Central Agency of Co-operative Societies, Ltd., at Johannesburg.

TABLE VII.

The following statement shows the number of societies, membership and maize turnover during the period 1922-1928:—

Year.	Number of Societies.	Membership.	Turnover in Maize.	Percentage of Total O.F.S. and Transvaal Crop.
			Bags.	
*1922-23.....	20	6,313	801,711	10
1923-24.....	21	6,938	1,658,001	12·3
1924-25.....	22	6,942	666,471	8·6
1925-26.....	22	6,872	2,504,138	13·0
1926-27.....	21	7,263	447,357	6·3
1927-28.....	21	6,506	1,097,693	8·4
1928-29.....	19	6,220	1,091,415	7·3
†1929-30.....	18	6,486	936,368	7·0

\* The financial year ends 30th June.

† On 31st December, 1930, there were 18 societies with 10,154 members.

While the membership and quantity of maize handled are large, the progress which the societies have made in relation to the total maize produced in the main maize areas cannot be regarded as very satisfactory. The present period of exceedingly low prices has directed attention to the possibility of securing more effective control of marketing, and it seems likely that a larger percentage of maize crop will in the immediate future be disposed of through co-operative channels. The large increase in membership during the past year confirms this view.

As the following table shows, the co-operative societies have been able to handle their quantities efficiently. Particulars are given only in respect of the two more important grades:—

TABLE VII.

Year.	Maize Pool Distribution. Per Bag of 200 lb.		Straight Average of Weekly "High" Prices per Year.	
	Grade 2.	Grade 6.	Grade 2.	Grade 6.
	s. d.	s. d.	s. d.	s. d.
1922-23.....	14 2	11 9	Not available.	
1923-24.....	11 7	10 9	12 0	11 10
1924-25.....	14 11	14 3	14 3	13 6
1925-26.....	11 1½	10 7½	11 0	10 6
1926-27.....	15 2	12 7½	14 2	11 11
1927-28.....	11 11½	10 11½	12 0	11 8½
1928-29.....	13 2½	12 10½	12 0*	11 8½
1929-30.....	10 2	9 2½	9 7½*	—

\* Straight average market price.

The pool prices shown above are the nett prices, while the market prices are subject to deduction of commission. An important point to be remembered also is that the market prices are, excepting in the two instances, averages of the highest price quoted each week. These figures do not therefore represent the weighted average, and as is well known a large percentage of maize is disposed of during the first three months of the marketing season. The figures of co-operative sales, therefore, show up better than are indicated by a first comparison. The prices shown in respect of the societies' results cover the average for the whole of the maize in the two grades handled by them.

It is admitted that the costs of marketing could be reduced—obviously these are capable of reduction only by having larger quantities of the product to handle.

But quite apart from the question of the satisfactory disposal of the product the co-operative societies have been able to accumulate reserve funds, and erect buildings which belong to their members, and which must in time place them in a still stronger position to market their portion of the crop satisfactorily. The following statement shows the present financial position of the 17 maize co-operative societies.

TABLE IX.

Society No.	Land Bank Loans.	Other Creditors.	Reserve Funds.	Fixed Property and Buildings.	Equipment, Supplies, Cash, etc.	Debtors.
	£	£	£	£	£	£
1	19,804	134,856	34,544	16,850	9,241	163,113
2	21,918	2,024	23,112	5,695	23,759	17,600
3	20,530	5,124	7,216	2,457	4,262	26,151
4	10,472	5,186	1,779	2,441	1,486	13,510
5	2,894	11,773	19,032	7,458	8,797	17,444
6	26,792	14,637	25,759	12,005	10,110	45,073
7	8,914	2,533	9,858	2,530	686	18,089
8	29,483	2,013	5,051	1,629	24,731	10,187
9	79,060	11,777	5,965	2,900	77,926	15,976
10	—	1,980	10,066	3,226	962	7,858
11	9,991	5,411	5,222	2,933	10,754	6,937
12	7,468	111	10,947	8,732	5,531	4,263
13	25,150	43,626	9,349	2,641	26,880	48,604
14	5,824	496	3,029	1,752	1,782	5,815
15*	3,059	947	16,610	1,600	2,706	16,310
16	2,053	2,657	11,978	1,367	3,758	11,565
17	—	7,498	8,311	1,242	962	13,605
TOTAAL...	273,414	252,649	207,828	77,458	214,333	442,100

\* Figures of previous year.

The societies, in addition to functioning as maize distributors, also render a useful and profitable service in the supply of farming requisites to their members. During the past three years these operations have assumed important dimensions, as may be seen from the following statement:—

	Farming Requisites.	Total Turnover.
1927-28 ... ..	£174,472	£776,881
1928-29 ... ..	268,876	1,029,976
1929-30 ... ..	255,183	966,146

#### SUITABILITY OF MAIZE FOR LARGE SCALE CO-OPERATION.

There is no question that a crop like maize which can be sold on a basis of grade for immediate or for future delivery lends itself particularly well to large-scale co-operative marketing.

The question of safe and suitable storage is easily solved, when the quantity is sufficient to justify the capital expenditure involved. In order to prevent recurring gluts and shortages, the maize farmers are able, through co-operative distribution, to feed the market and be saved a great deal of the necessity of disposing of their crop during those periods of the year when the gluts occur. This does not mean that a co-operative organization is expected to speculate or gamble with the products of its members. It means rather that by closely studying and following the market situation from day to day it is able—much more efficiently than the individual farmer—to market the crop intelligently. Central selling organizations are

able to keep in closer touch with market conditions and tendencies, both world and local, much more easily than the farmer, and are therefore in a much better position to determine the selling policy than the farmer, who is not in possession of the necessary information or who may have to be guided by advice from interested sources.

It is, moreover, a suicidal policy for farmers to compete against each other when such competition will inevitably lead to reduced prices.

But organization alone is not a panacea for all marketing evils. Co-operation has to be based on sound business principles, and to succeed it must be able to show that it is able to discharge a service which the farmer as an individual is not able to perform as efficiently for himself. It must also be in a position to demonstrate that efficiency on a basis of £ s. d. Co-operation must have as its fundamental object the return to the grower of a larger share of the consumer's price than he is getting through the established commercial channels, and only by its ability, or otherwise, to do this can it be adjudged a success or a failure. It follows that its management, selling organization, accounting and general overhead expenditure must be under constant supervision and check, and that no less efficiency must be tolerated than is expected in a well conducted private business. One may say that the majority of failures of co-operative organizations has been due to bad management, and a lack of application of ordinary business principles. With such a large percentage of the maize crop produced in a comparatively restricted area there is no reason why a much larger percentage of the crop should not be marketed co-operatively.

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### CHAPTER III.

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#### THE ECONOMICS OF MAIZE PRODUCTION.

The information in respect of the following chapter is largely taken from Department of Agriculture Bulletin No. 81, entitled "An Economic Investigation of Farms in the Maize Districts of the Orange Free State" by J. C. Neethling, B.A. (S.A.), Ph.D. (Cornell), of the Division of Economics and Markets.

The details of the study were for one year only. The number of farms surveyed was 109, comprising in all 95,979 morgen of farm land, situated in the north-eastern area of the Orange Free State, approximately within the boundaries of a line connecting the railway points Kroonstad, Arlington, Bethlehem, Reitz, Petrus Steyn, Westleigh Junction.

The object of the investigation was to inquire into the farm organization on farms mainly devoted to maize growing and to establish a basis for a comparison of the various combinations of farm enterprises on the farms analyzed.

The average size of farm included in the survey was 881 morgen, which is 294 morgen larger than the average for the 2,826 farms comprising the districts of Bethlehem, Kroonstad, Lindley and Reitz, where the investigation was conducted.

Of this area of 881 morgan, on the average—

190.2 morgan were utilized for maize or	21.6 % of the total.
90.2 " " " other crops or	10.2 " "
582.9 " " " grazing or	66.2 " "
17.2 " " " farmsteads, etc., or	2.0 " "
<hr/> TOTAL 880.5	<hr/> 100.0 %

The following table shows the average number of morgan devoted to maize on farms of different sizes:—

Size.	Number of Cases.	Average Morgan per Farm.	Average Morgan in Maize.	Per Cent. of Maize Area to Farm Area.	Average Capital per Farm.
100- 399 morgan	28	268.7	85.4	31.8	£ 3,528
400- 699 "	23	547	135.3	24.7	6,909
700- 999 "	20	844.6	163.2	19.8	10,311
1,000-1,299 "	17	1,033.5	205.4	19.8	12,440
1,300 morgan and over.....	21	1,971.9	404.3	20.5	22,308
<hr/> TOTAL.....	<hr/> 109	<hr/> Av. 880.5	<hr/> 190.2	<hr/> —	<hr/> 10,494

Coming now to the matter of capital invested the investigation disclosed the following:—

Number of Farms.	Average Morgan per Farm.	Average Capital per Farm.	Average Capital per Morgan.
19	232.8	£ 2,822	£ 12.1
24	481.7	5,827	12.1
18	702.4	7,972	11.3
21	993.7	11,212	11.3
7	1,046.4	14,253	13.6
7	1,575.7	17,639	11.2
13	2,163.9	26,783	12.4
<hr/> TOTAL 109	<hr/> Average 880.5	<hr/> £10,494	<hr/> £11.9

The point to be observed from the above figures is the small variation which exists in the capital invested per morgan irrespective of the difference in area.

The average capital outlay per farm as shown above was £10,494, distributed as follows:—

Land ... ..	£7,054
Buildings and improvements ... ..	999
Live stock ... ..	1,950
Equipment (implements, etc.) ... ..	465
Feed and supplies ... ..	26
	£10,494

On the live stock capital £1,950; £746 per farm or 38.2 per cent. is devoted to cattle and £1,113 or 57.1 per cent. to sheep; £56 or 2.9 per cent. to horses and mules; £22 or 1.1 per cent. to pigs and £13 or 0.7 per cent. to poultry.

#### FARM RECEIPTS.

The average farm receipts amounted to £1,539, derived as follows:—

	Average per Farm.	Per Cent. of Total.
	£	
Maize.....	730.25	47.4
Other crops.....	78.06	5.1
Sheep and wool.....	493.00	32.0
Cattle, milk, butter.....	169.00	11.0
Other live stock.....	48.00	3.1
Miscellaneous.....	21.00	1.4
	1.4	1.4
<b>TOTAL.....</b>	<b>£1,539.311</b>	<b>100.0</b>

It will be noted that the returns are divided fairly evenly between maize and live stock. For the crop year 1927-28, in respect of which this study was commenced the prices of all products were very much higher than they are to-day and to enable definite statements to be made, as to the relative advantages of different types of farm organization in the maize area, it will be necessary to have the results of a few more years. The details have been collected and a fuller report is now in course of preparation.

A summary of receipts, expenses and profits per farm shows the following figures in respect of the 109 farms surveyed:—

Total receipts from all farming sources ... ..	£1,931.00
Total expenses ... ..	1,013.35
	£897.09
Farm income ... ..	917.65
Value of unpaid labour ... ..	20.56
	£897.09
5% Interest on £10,494 average capital ... ..	£524.80
	£372.29



The more important features which may be gleaned from the first report are:—

- (1) The high capital value of all farms in relation to the comparatively small area under maize.
- (2) The comparatively negligible part which dairying, pigs and poultry play in the farm organization. The average number of cows per farm was 26, pigs 10, and poultry 97.
- (3) The dependence of the farmer on the maize crop is shown by the fact that as the percentage of income from maize increased, the operators' earnings increased.
- (4) Where the average yield per morgen was 4.8 bags the profit was 10s. 9d. per morgen, where the yield was 9.1 bags, the profit per morgen was £2. 2s. 5d. per morgen, and £4. 4s. 10d. where the yield was 13 bags and over.
- (5) The total cost of production per morgen remained approximately the same, but the farmer's income is very seriously affected by the yield per morgen. The 10 most successful farms had 505 morgen per farm under maize and produced 10.7 bags per morgen.
- (6) An important feature brought out by the investigation is that of the relationship between the various enterprises. In the cases of the more successful farms 63.7 per cent. of the cash receipts was from maize, 23.5 from sheep and wool, 4.5 per cent. from cattle. The average of all farms was 45.5 per cent. from maize, 33.7 per cent. from sheep and wool, and 12 per cent. from cattle. The distribution of income on the least successful farms was 29.6 per cent. from maize, 42.8 per cent. from sheep and wool, and 11.9 per cent. from cattle. These figures indicate that the live stock side of maize farming in this area was not so efficient from the income earning point of view as maize. If this were true in times when prices were good it shows how very important it is that the maize farmer must adjust his farm organization to make efficient use both of his maize area, and the rest of his farm.

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## CHAPTER IV.

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### COMPULSORY DELIVERY OF MAIZE FOR SALE THROUGH CO-OPERATIVE CHANNELS.

There has been evident of late a very decided tendency for maize farmers to regard as their salvation, the compulsory pooling of all maize.

This viewpoint has in the past been stressed, and with the recent tremendous drop in maize prices has received an added importance and significance. In the condition which the maize farmer finds himself to-day it is to be expected that he will give favourable consideration to almost any scheme which sets out to give him an immediately payable price for his maize, irrespective of the ultimate

effects of such a policy. Most people who have given serious attention to the problem of maize marketing are agreed that better results would be achieved if a much higher percentage of the maize crop could be marketed through co-operative agencies. The advantages of such a scheme are referred to in an earlier portion of this review and need not be repeated here, but the question of obtaining legislative authority for the compulsory sale of maize through these channels is, one of very far-reaching importance, and requires consideration not only of its immediate effect on maize, but raises the whole question of price control and stabilization, with all their attendant implications.

Compulsory control of maize means in so many words, the granting of power by legislation to the executive created under such a scheme to perform at least some of the following acts, if the control is to achieve the results expected by its protagonists:—

- (1) The control of sufficient maize to be able to lay down an effective policy in regard to the rate at which maize will be marketed.
- (2) The control of the price at which maize will be sold for local consumption, with due regard to the costs of production.
- (3) The determination of the quantity of maize which is to be regarded in any one year as surplus to local requirements.
- (4) The decision of how the local surplus is to be disposed of.
- (5) The adjustment to be effected between price received for that portion of the crop sold in the Union and the portion exported.
- (6) The establishment of marketing machinery which will cost less to the farmer than the ordinary commercial and co-operative channels available without compulsion.

#### OTHER EFFORTS IN STABILIZATION AND PRICE FIXING.

During the past twenty years there have been numerous efforts along similar lines in various parts of the world, and to a lesser degree in South Africa. Rubber, coffee, Egyptian cotton, sugar, tobacco, raisins, currants, have at different times been subjected to some form of control and rationing, but probably the largest single experiment so far conducted in this direction is the establishment of the Federal Farm Board in the United States of America.

The history of all these efforts has been the same. In the early stages there has been an appreciable improvement in prices, an expansion of production attracted by the high price level guaranteed by the control, and then a collapse brought about by the large quantities not marketed, and carried over; resulting in a last condition which was much worse than the first. In practically every instance the story covers the same steps and whatever the other causes to which one may ascribe the failure of these efforts, the one outstanding weakness has been the failure to control the production in the face of an attractive price factor, determined in the first instance by the control.

The United States Farm Board is intended to operate in certain products and has already designated the following as agricultural products in terms of the Act: Cotton, dairy products, grains, rice, live stock, wool and mohair, tobacco, poultry and eggs, seeds and potatoes. The Board has now been functioning for a little more than one year and it is probably too soon to judge whether the scheme will meet with ultimate success. Briefly the main object is for the Board to operate on the market to the extent of actually purchasing sufficient quantities of the products in each year, as will determine the market price of that proportion of the crop used within the United States. The surplus will be exported, sold at world prices, and the difference made up by fees or levies to be collected on the quantities consumed in the United States.

Attention has recently been directed to the operations of the Board in respect of cotton and wheat. In regard to the latter it is stated that 60,000,000 bushels was purchased through the Grain Stabilization Corporation at prices ranging from 1.13 dollars to 1.25 dollars, i.e., approximately 4s. 8½d. to 5s. 2½d. per bushel of 60 lb., or 15s. 8d. to 17s. 4d. per bag of 200 lb. Within the 12 months wheat has fallen to 80 cents per bushel or 11s. 1d. per bag of 200 lb. The Board has stated as its opinion that a reduction in acreage is absolutely indispensable. In regard to cotton the Board has accumulated some 3½ million bales which still have to be marketed.

The four types of stabilization recognized by the American Farm Board are:—

- (1) The normal action of co-operative associations over a period of years.
- (2) Ad hoc stabilization measures by co-operative associations undertaken in an emergency, with or without Government funds.
- (3) Major stabilization measures by national stabilization corporations such as those undertaken for wheat and cotton at the Board's instigation.
- (4) Production control, removing the fear of surpluses at their source.

A correspondent to *The Economist* (31st January, 1931) in reviewing the first annual report remarks as follows:—

“The first of these possibilities (No. 1 above) is clearly regarded as valuable by the Board mainly in so far as it is able to bring the fourth into play.” On the second group which has also had support from the Board, the following comment is made: “There is in the opinion of the Board a limited field for such operations but the experiences of the last year has re-enforced earlier experiences in showing that such measures cannot wisely be undertaken lightly, for many involve not only excessive risk of public funds but grave danger of serious disaster to co-operatives themselves.” Stabilization operations on a major scale, the third of the Board's classes and the most spectacular are analyzed in more detail. It is observed in the first place in connection with the Board's experience with wheat that, in order to exert any material effect on the market, it is inevitable that a large quantity

of the commodity must be taken. When once this large quantity is accumulated it exerts a depressing effect on prices which cannot be dispelled by the most emphatic announcements that it will not be thrown on to the market without warning." . . . "It is quite clear, however, that the Board regards stabilization machinery as subordinate to the supreme task of production control which has now for some time figured in the forefront of its educational programme."

It is not intended to recite in detail the experience gathered during the course of operating the various control and stabilization schemes mentioned in the earlier portion of this chapter. It need only be stated that they have almost without exception failed because of their inability to prevent production at the stabilized price out-running the demand for that commodity. Nor is it necessary to answer at any length the question often raised why it is possible for manufacturers to fix prices, and not the farmer. The manufacturer's costs are known exactly, his producing organization is regulated to what he estimates his likely demand, and his output is governed by that demand. With the figures of world maize production quoted in this review in mind it must be apparent that nothing short of wide international agreements could succeed in securing production control sufficient to influence and warrant stabilization or price-fixing measures. And when that has been done such measures will probably only result in a less demand, and a contraction in production to the bare minimum world requirements at the price level created.

A feeding material like maize is bought very largely on its food value relative to other feed stuffs. If its price goes beyond a certain level, substitution takes place and less maize is bought. If the price falls, more maize is used. With a quantity of maize available above the ordinary minimum required by consuming countries maize prices must bear a relationship to the price and quantities of those commodities which could be used to replace maize.

#### EFFECT ON UNION MARKET.

Let us now see what the probable results of price stabilization or control would be in the Union.

It has been stated that our average annual consumption is in the neighbourhood of 12 million bags, a considerable portion of which is utilized for human consumption. The maximum export figure was 11,457,192 bags in 1925-26. The year immediately following found the Union with barely sufficient maize for its own requirements. The average annual exports during the past four years has been approximately 6,000,000 bags, or roughly one-third of the crop. The view is held by many protagonists of compulsory co-operation that the farmer is entitled to a payable price for at least that portion of the crop which is marketed locally, and quite irrespective of what world conditions may be. Others go so far as to require that in addition the South African consumer should contribute in the price he pays, the whole or part of the exporting costs, so as to obtain for the maize farmer a payable price for the whole of his production. In effect this proposal would amount to a tax levied on the portion consumed in the Union, and incidentally a tax to be paid by every

user of maize in the country. If, as a result of prices, production were increased there would be a larger proportion of the crop to be exported, and in order to make up the losses on the export the South African consumer would be asked to contribute a still higher percentage on the quantity used in the Union, as the following table shows:—

Assumed Production.	Value of Home Consumption at 8s. per Bag (12,000,000 bags).	Exports.	Loss on Export at 3s. 6d. per Bag.
18,000,000 bags.....	£4,800,000	6,000,000 bags	£1,050,000
Add Export losses.....	1,050,000		
Cost of 12,000,000 bags.....	<u>£5,850,000</u>	Additional cost to Union consumer 1s. 9d. per bag or 21·8 per cent.	
22,500,000 bags.....	£4,800,000	10,500,000 bags	£1,837,500
Add Export losses.....	1,837,500		
Cost of 12,000,000 bags.....	<u>£6,637,500</u>	Additional cost to Union consumer 3s. per bag or 37·5 per cent.	
27,000,000 bags.....	£4,800,000	15,000,000 bags	£2,625,000
Add Export losses.....	2,625,000		
Cost of 12,000,000 bags.....	<u>£7,425,000</u>	Additional cost to Union consumer 4s. 4½d. per bag or 54·6 per cent.	

It is hardly necessary to carry these calculations any further to show the pernicious effect of a policy of demanding from the Union consumer of maize a price which is neither adjusted to his needs, to the level fixed by demand, nor to the influences of the markets where our surplus maize has to be sold.

The criticism has on numerous occasions been levelled at our farming methods that too much maize in the form of grain is exported, and that sufficient use is not made of our advantages in this respect for the feeding of live stock. The only way in which we can expect this development is to have maize at a level at which it may be converted into products such as beef, dairy products, bacon, poultry and eggs. If maize prices are so adjusted as to make its use impossible for these enterprises, its consumption in the Union cannot expand, in fact, if the prices of other feeding stuffs are relatively lower the probability is that its use would become more restricted. The writer regards maize as a key industry in South African agriculture, and as such should be subjected to no artificial price fixing or stabilization schemes, or for that matter compulsory co-operation efforts which have these devices as their object.

To secure by ordinary methods what in reality would be a monopoly may be a legitimate effort of co-operative societies operating on a distinctly voluntary basis, although the danger is always present of the power being utilized to the ultimate detriment of the industry concerned. To place this power in the hands of some central organization by Act of Parliament and compel farmers to deliver a product like maize to a central selling organization, would be but another experiment in testing the effect of interference with the ordinary channels of commerce and another costly try-out of a

type of economic doctrine which other countries have temporarily been led to accept with disastrous results to the very undertakings which they set out to help.

It has been assumed that the monopoly powers would be utilized for the purpose of fixing prices for maize, and in spite of assurances to the contrary it is difficult to conceive that such a policy would not be adopted. To say that the maize farmer cannot remain in business unless he is compelled to co-operate, is only another way of saying that through compulsory co-operation he will receive a payable price for his product. In the existing condition of the commodity market it is impossible to make this statement without embarking on price interference schemes and no more dangerous or uncertain period could be chosen, even if these proposals had in them anything warranting acceptance.

Many people who ask for the application of compulsory co-operation for maize produced throughout the Union cannot possibly have given due consideration to some of the practical difficulties involved, such as:—

- (a) Native maize produced in areas which contribute only a relatively small percentage to the total Union crop;
- (b) maize which is handled by the country storekeeper; maize sold direct by farmers to consumers or to manufacturers;
- (c) how to determine the quantity for export and whose maize shall be exported;
- (d) sale of maize in areas which do not produce large quantities, but have from geographical reasons a ready and payable market;
- (e) the difficulty of determining prices when the yield per morgen, risk of crop failure and costs of production are all varying factors.

The maize farmer will argue that this viewpoint is harsh and unsympathetic, that through no fault of his he is in a deplorable condition financially, and that the exceedingly low prices he receives for his maize must result in ultimate ruin. This is the position of a great many primary producers to-day not only in the Union, but over the greater portion of the world. No single country has any power to effect a rise in the general world price level of these primary products and the only hope one can express is that when the crop surpluses have moved into consumption, prices may improve, and that the farmer will be able to participate in such improvement. There is no economic panacea for the conditions which exist to-day and there is the grave danger that at times like the present support may be given to all kinds of palliatives which, though attractive superficially, are inherently unsound.

The past decade has been a phase in maize production in the Union—a phase which has helped to define the area suited to the crop, to determine suitable varieties and methods of cultivation and fertilizing—a period of high, medium and low prices. The new era which has now begun will place maize production in a very different light, one in which a sounder system of agriculture will take the place of the more or less one crop system which has prevailed

very largely up to now. In the past the one-fifth of the farm under maize has been expected to carry most of the burden of the undertaking, capitalized very often on the basis of its suitability as a whole as a maize-growing proposition. The remaining four-fifths has in most cases never been pushed to contribute its fair share towards the financial success of the farm. It is not so much to an increase in the maize crop that one must look for improvement as to the adjustment of the maize production to the other enterprises of the farm. It may well be that in the earlier period of this readjustment smaller maize crops are necessary—not smaller yields per acre, but less total maize. With the natural advantages which the area possesses, it will not appear too sanguine to forecast that the Union's maize farms will maintain a larger number of cattle, sheep, pigs and poultry than any other area of similar size in the Union.