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A Comparative Analysis of Corn
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Andries Petrus Scholtz

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Ph.D. degree in Economics

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ABSTRACT

A COMPARATIVE ANALYSIS OF CORN PROBLEMS AND PROGRAMS IN THE UNITED STATES AND THE UNION OF SOUTH AFRICA

by Andries P. Scholtz

The corn industry in South Africa has experienced considerable growth since 1949/50. The situation has changed from one of impending shortages to one of perennial surpluses that have to be exported at a loss. The current government program to stabilize the corn industry was instituted during times of shortages and has remained basically unchanged despite the marked change in the actual situation. This has not encouraged an adjustment between supply and demand. Since the United States also has been experiencing problems with corn surpluses, it was felt that a comparison of the problems and programs for corn in the two countries perhaps would provide useful pointers for future policy in South Africa.

The approach followed was to examine in detail the underlying factors, which have led to the current situation in South Africa. Delays in the publication of Census data have proved a limiting factor in this investigation. The programs evolved in South Africa and the United States, respectively, were then described and evaluated. Finally the experience of the two countries was compared and the relative merits of the main props in their programs examined.

An examination of the South African situation shows that the increase in corn production was the result of technological advances aided by favourable price levels for corn and increased stability of corn prices. The chances of an increase in domestic consumption in the short run are small, but increased use of corn as animal feed holds some promise for the long run.

The Board's price policy has not aimed at bringing supply into line with domestic demand. The current situation requires a reconsideration of the Board's price policy as well as the basic form of control. More attention will have to be paid to stabilizing incomes, since increased mechanization has increased farmers' needs for minimum levels of cash returns.

An evaluation of the price support program in the United States reveals the following: that equity of income distribution within agriculture has not been improved; that agriculture's share of the total income has been prevented from falling off as rapidly as would otherwise have happened; that effective supply control is essential if support levels are high, but this has been impossible to achieve in practice. Price support programs should be designed to encourage adjustment between supply and demand, but they cannot be expected by themselves to bring about an adjustment of the magnitude required in present circumstances.

In South Africa it is not clear whether the main problem is connected with the allocation of resources between agriculture

and the rest of the economy or with the allocation of resources within agriculture. The latter type of adjustment falls more within the scope of the price mechanism, and the Board therefore needs to reappraise its price policy. A less comprehensive form of control seems to be advisable; in this respect a floor price system such as in the United States holds promise. The Board also should take a more definite stand with respect to the increased surplus production of corn. Not only should the producers' levy be employed as a signal for production, but the gross producers' price should reflect the adjustment in supply desired by the Board. If prices are to be maintained above the level justified by local conditions relative to world prices, effective control over supply would become a necessity. The United States' experience clearly shows that acreage control is impractical and control over the quantity marketed seems to be the only alternative with a chance of success.

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By

Andries P.^{etrus} Scholtz

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CHAPTER I.

THE PURPOSE AND RATIONALE OF THE STUDY.

The traditional problems of instability in agriculture, under essentially free market conditions, have been wide price fluctuations due to unstable demand-supply relationships. These problems have led to government programs for the support of agricultural prices and incomes in many countries. The near universal concern with how this could best be accomplished is reflected in the decision of the Food and Agriculture Organization of the United Nations Organization in 1955 to set up an Expert Working Party on Systems of Price Support.¹

Government measures to support prices and incomes cover a wide range of possible actions. These can be roughly classified as follows:

(1) Measures to support the general level of farm prices but which do not involve price guarantees; for example the regulation of international trade; promoting the organization of marketing, such as marketing co-operatives; or government purchases for stockpiling.

(2) Measures consisting mainly of price guarantees to farmers - the guarantees could be in the nature of minimum prices, price ranges, or fixed prices.

(3) Measures to raise incomes without regulating prices but which would reduce production costs and/or increase productivity,

¹"Report of the Expert Working Party on Agricultural Support Measures", Monthly Bulletin of Agricultural Economics and Statistics, Vol. VI, No. 3, March, 1957.

concessions, crop insurance schemes, land improvement, subsidized production of farm supplies, etc.

In the Union of South Africa legislation for the establishment of comprehensive government programs to support agriculture dates back to the Marketing Act of 1937,² as amended. The Act provided for the establishment of a number of control boards to regulate the production and sale of certain important agricultural commodities. The activities of these control boards were and are supervised and co-ordinated by a National Marketing Council.

Corn, as the major cash grain crop in South Africa, was one of the commodities for which a board of control was established.³

A detailed description of developments in the corn industry in South Africa will be presented later. At this stage a brief outline of the current situation and the salient features of the corn industry will suffice.

The production of corn is concentrated in the provinces of Transvaal and Orange Free State. It is generally the main field crop and many farms specialize completely in the production of corn. The annual value of the crop averages about 30 per cent of the total value of all field crops, and about 15 per cent of the value of total farm production. Corn also is of major importance in direct human consumption, providing 37 per cent of the average per capita calorie-intake.

²Act No. 26 of 1937.

³As shown in Chapter II, an experimental advisory board, of much the same kind as the statutory board, was established in 1935.

It is particularly important in the diet of the low-income groups.

In terms of the present support program administered by the Corn Control Board, the Board is the sole purchaser of corn from producers; the Board also fixes the producers' prices of corn as well as maximum prices for the wholesale and retail trades. The Board does not participate in the physical handling of the crop, but controls and supervises the activities of its appointed agents such as grain merchants and farmer co-operatives. Up to the present time there have been no attempts to restrict production or the quantities marketed directly.

Table 1 clearly reflects the significant growth experienced by the corn industry since 1937. Not only has the area planted expanded but yields also have improved.

As is indicated in the table, production exceeded domestic consumption by substantial quantities. For the five marketing seasons 1955/56 - 1959/60 the average annual domestic surplus actually amounted to 10.6 million bags.

South Africa has regularly exported corn, except for a few years during and just after World War II, but it has become more and more difficult to sell these excess quantities abroad without incurring heavy losses. The Board, for instance, incurred a loss of £2.3 million on exports totalling 11.7 million bags during the 1958/59 marketing season.⁴ Considering the competition provided by the United States,

⁴Annual Report of the Corn Control Board for 1958/59, Annexure XIII, p.42.

Argentina and certain European countries, a policy of simply exporting all domestic surpluses could hardly be advocated.

Table 1. Average production and consumption of corn in South Africa.

Marketing seasons.	Total production.	Domestic consumption.	Surplus of production over consumption.
thousand bags of 200 lb. each.			
1935/36-1939/40	22,000	15,000	7,000
1955/56-1959/60	39,200	28,600	10,600

- Sources: (1) For the seasons up to and including 1956/57 - Agricultural Census Reports, Government Printer, Pretoria.
- (2) For subsequent seasons - Estimates by the Division of Economics and Markets, Union Department of Agriculture, published in the Annual Report of the Corn Control Board for 1958/59, Pretoria.

The domestic demand for corn, contrary to the situation in the United States, is dominated by the quantities demanded for direct human consumption. Since World War II there has been a significant increase in the indirect consumption of corn - largely for feeding purposes - but this seems to have levelled off in recent years. The result is that usually more than four-fifths of the crop is marketed, of which about one-half is intended for human consumption.

A comparison of long-run trends in domestic consumption and production reveals the following :

Average per capita consumption of corn has increased from 1.53 bags during the marketing seasons 1935/36 - 1939/40 to 2.02 bags during 1955/56 - 1959/60. This represents an increase of approximately 0.023 bags per capita per year. When broken down by uses it is found that per capita direct consumption declined slightly from 1.27 bags to 1.19 bags over the period in question, while indirect consumption increased from 0.26 bags to 0.83 bags per capita. The opinion is held by many that the producers' prices for corn and other cash crops were generally fixed too high relative to livestock and dairy prices. If this is true and if the situation were corrected it can provide an important boost to the indirect consumption of corn.

During this same period average per capita production increased from 2.24 bags to 2.77 bags. This represents an increase of approximately 0.025 bags per capita per year. Compared to an annual rate of increase of 0.023 bags for domestic consumption, it means that production has actually increased its lead over consumption and may continue to run ahead for the foreseeable future.

This state of affairs presents a serious problem. With domestic demand at current levels and exports taking place at a loss, it appears that an adjustment in production is called for. This could be attempted indirectly, for example by lowering the price, or directly, for example, by limiting the area cultivated and/or the quantities marketed. The Corn Control Board will have to give careful consideration to possible changes in the present arrangements that may help to remedy the situation.

It is a hypothesis of this study that South Africa can profit from the experience of other countries which have used different methods in dealing with roughly similar problems. Before the Marketing Act of 1937 was enacted the various schemes proposed or in operation in overseas countries during the thirties were investigated. It seems appropriate to review these experiences for the more recent years, particularly the experience of the United States, which also has had to deal with the problem of corn surpluses.

In the United States different methods from those in South Africa were used. Corn prices were supported in the open market through the use of minimum price guarantees based on parity levels rather than a fixed price based on costs of production. Storage-and-loan programs were used to remove surpluses from the market rather than using one-channel marketing schemes. Moreover during much of the time these programs were in operation, serious attempts were made to restrict production via acreage control.

The production of corn in the United States is concentrated in the North Central region, with the States of Iowa and Illinois as the most important producers. On the average only about 30 per cent of the crop is marketed, and the remainder is used as feed on the farm where grown. Even so, as a cash crop, corn is third in value in the list of crops. Normally about 45 per cent of the crop is fed to hogs, another 45 per cent is fed to cattle and other types of livestock, and only 10 per cent is used for industrial purposes, human food, or seed.

Like South Africa, the United States has seen production outrunning consumption in recent years. Storage stocks have been accumulating and export programs to reduce the quantity of supplies on hand became necessary.

There exist important differences between the markets for corn in the United States and in South Africa. As a result of the fact that approximately nine-tenths of the crop is used as livestock feed in the United States, there is a very close relationship between the corn and livestock industries. The price of corn and the total supply affect not only the number of animals to be fed, but in the short run they also affect the level of feeding and the age (or weight) at which animals are marketed. A well-known example is the traditional importance of the hog-corn price ratios⁵ in explaining fairly regular 2 - 3 year cycles in hog production.⁶

The question also arises as to whether it would be wise to look toward a country whose programs have not been a model of success. Although it is probably an overstatement it has been remarked that, "For sheer size and ineffectiveness they probably have no equal".⁷

⁵The price of hogs per hundredweight divided by the price of corn per bushel.

⁶Nicholls W.H., A Theoretical Analysis of Imperfect Competition with Special Application to the Agricultural Industries (The Iowa State College Press, Ames, Iowa, 1941) pp. 310-311.

⁷First National City Bank Monthly Letter, New York, January, 1958, p. 9.

But it is exactly under these circumstances that it is necessary to distinguish whether failure is due to the basic principles involved, or to the practical methods chosen to carry out these programs.

It is possible that the differences in the corn market in the two countries would make an unsuccessful American program fairly effective in South Africa. Even if the United States' experience may not provide the answer as to how it should be done, South Africa may learn what alternative programs should not be considered in an attempt to solve its problem.

The investigation into the problems and programs for corn in South Africa and the United States that is presented here, can be outlined as follows:

In Chapter II developments in the corn industry in South Africa since 1939 are described, with particular emphasis on the period since 1949. This chapter is intended to provide a backdrop against which the measures of the Government to support the corn industry can be evaluated. For this reason attention is focussed chiefly on production tendencies, domestic consumption, export activities and the income position of corn farmers. Unfortunately the publication of agricultural census data is very late, but since it constitutes the only source of information on many items of major importance, detailed analyses had to be limited to the period for which census data are available - i.e. up to 1956.

The discussion in this chapter deals almost exclusively with the farming activities of white farmers, because the data in respect of

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white farmers are much more complete and their farming activities almost completely dominate the commercial aspects of farming in general. Thus it can be regarded as a discussion of commercial farming in the Union.

In Chapter III the history of government control measures for the corn industry in South Africa is described. The role assigned to the Corn Control Board is depicted and the results achieved by the Board are evaluated.

Chapter IV contains a brief history of the United States' programs for corn, with particular emphasis upon the period since 1938. In Chapter V a critical analysis and evaluation of these programs is presented.

In Chapter VI the programs followed in the two countries and the results achieved are compared. Some conclusions are also drawn regarding the future application of support measures for the corn industry in South Africa.

Since the units of measurement, et cetera, used in South Africa in many instances differ from those used in the United States a short glossary of terms is subjoined.

GLOSSARY.

Mealies or maize	:	Corn.
Kaffircorn	:	Sorghums.
Marketing Season/ Year	:	From 1st May of Year X to 30th April of year X + 1.

- Production Season/
Year : Approximately from 1st October of year X to 30th April of year X + 1; thus the crop produced in production year 1958/59 corresponds with the crop marketed in marketing year 1959/60.
- Bag of corn : 203 lb. gross weight or 200 lb. net; equals 3.571 bushels.
- Morgen (of land) : equals approximately $2\frac{1}{9}$ morgen.
- £1 (one pound) : South Africa's monetary unit, equal to 20 South African shillings or 240 South African pence (or pennies); exchange rate on the U.S.A., £1 = approximately \$2.80.

CHAPTER II.

DEVELOPMENTS IN THE CORN INDUSTRY IN SOUTH AFRICA SINCE 1939/40, WITH EMPHASIS ON THE PERIOD SINCE 1949/50.

General Aspects and Structural Considerations.

Before examining the changes which occurred in the corn industry during the postwar period, it is advisable to sketch briefly the general background against which these changes took place. Attention will be focussed upon certain structural changes within agriculture, as well as the general position in the allocation of productive resources between the agricultural and non-agricultural sectors of the economy.

Structural Considerations:

Number of farms and average farm size: It will be observed (Table 2) that the number of farms owned by whites fluctuated to some extent and that corresponding changes occurred in the average size of farms.

Table 2. Number of farms and average size of farms owned by whites.

	1937	1950	1956
Number of farms	104,554	116,848	108,883
Average farm size (morgen)	956	868	943

Sources: Agricultural Census Reports Nos. 17, 24 and 30, Government Printer, Pretoria.

The Bureau of Census and Statistics points out in its Agricultural Census Report for 1955/56, however, that an important part of the change in the number of farms is due to a change in the practice of rendering returns: "Up to and including the 1953-54 census, farmers whose farming activities extended over more than one farm or tract or piece of land within the same magisterial district were at liberty either to complete separate returns for each such farm or tract or piece of land, or on the other hand, to consolidate all their farming activities in one return.

"With the 1954-55 census 'only one form must be completed in respect of each farming unit, irrespective of whether farming activities are carried on on one or more farms' ... provided the farms are situated within the same magisterial district.

"The large decrease in the number of farms since the 1952-53 census is primarily due to this consolidation."¹

Thus the figures in Table 2 are not strictly comparable; rather would it seem that no significant changes took place during the nineteen year period.

Owner-operated versus tenant-operated farms: An important increase occurred in the ratio of owner-operated to tenant-operated farms. In 1937 about 66.5 per cent of the farms were owner-operated while 27.0 per cent were tenant-operated; in 1957 the respective figures were 79.9 per cent and 15.7 per cent.² This may have had

¹Agricultural Census Report No. 30, pp.5-6.

²Calculated from Agricultural Census Reports Nos. 17 and 29.

an effect upon farm organization and farming activities, since owner-operators are, supposedly, less inclined to concentrate on purely short run gains at the expense of soil fertility, etc.

Farm population: The available information on farm population dates from 1949/50 only. Still it is particularly noticeable that while the number of whites living on farms steadily declined over the five-year period covered, there occurred a significant increase in the number of non-whites living on farms of whites (Table 3). The importance of this development is discussed below in the section which deals with population shifts.

Table 3. Numbers of whites and non-whites living on farms of whites (thousands).

Year	Whites			Non-whites		
	Male	Female	Total	Male	Female	Total
1950	240	233	473	988	1,226	2,214
1955	214	198	412	1,330	1,164	2,494

Source: Agricultural Census Reports Nos. 17 and 29.

Tractors on farms: One of the most important changes in agriculture is the rapid rate in mechanization. The great increase in the number of tractors on farms indicates the general trend towards mechanization (Table 4). The increase occurred mainly in the eight years from 1948-1955 and it underlines the speed at which adjustments in farming techniques have taken place.

Table 4. Number of tractors on farms of whites.

Year.	Number.
1937	6,000
1947	22,000
1955	87,000

Sources: Agricultural Census Reports Nos. 17, 24 and 29.

Area cultivated: Another striking feature is the expansion in area cultivated on farms of whites since 1937. In this respect the area planted to field crops shows the biggest absolute increase (Table 5). It is interesting to note that the ratio of land under field crops to fallow land increased significantly between 1945/46 and 1954/55, which would indicate more intensive use of the available arable land.

Table 5. Area under cultivation in the Union.
(Farms of whites only).

	Field crops	Fallow land	Other	Total area cultivated	Percentage of total farm area
	(thousand morgen)				
1937/38	5,575	938	312	6,825	6.8
1945/46	5,655	2,149	336	8,140	7.9
1954/55	7,592	2,087	439	10,118	9.9

Source: An Abstract of Agricultural Statistics, Department of Agriculture, Pretoria, May 1958, p.1.

Changes in total output: In view of some of the changes mentioned above a change in total output could be expected. Production in all three categories of output has increased at a very rapid rate since 1946/47 (Table 6). The volume of livestock products has lagged considerably behind the volume of horticultural and agricultural products. This reflects to a large extent the drive toward increased production which accompanied increased mechanization, particularly with reference to the processes of cultivation.

Table 6. Indices of the volume of agricultural production (1936/37-1938/39 = 100).

Season	Agricultural products	Horticultural products	Livestock products	Total production
1936/37	105	98	96	100
1946/47	110	124	114	114
1956/57	182	215	159	176

Source: An Abstract of Agricultural Statistics 1958, p.73.

Allocation of Resources between the Farm and Non-Farm Sectors:

The main factors receiving attention will be population shifts, the labour force and capital investment.

Shifts in population: The population of South Africa can be divided into two main groups - whites and non-whites. A breakdown of census figures for each group into numbers resident in urban areas and in rural areas clearly reflects a strong flow to the urban areas (Table 7). The number of whites in rural areas is actually

declining, while the rate of increase of non-whites is considerably lower in rural than in urban areas. From 1946 to 1951 the total non-white population increased by 11 per cent, the rural non-white population by only 4 per cent, while the urban non-white population increased by as much as 27 per cent.

Table 7. Population of the Union of South Africa.

Year (30th June)	Whites.			Non-whites.		
	Rural	Urban	Urban as percentage of total [¶]	Rural	Urban	Urban as percentage of total [¶]
1936	642	1,361	68	5,741	1,843	24
1946	603	1,769	75	6,420	2,624	29
1951	571	2,071	78	6,704	3,326	33

[¶]Calculated by writer.

Source: Monthly Bulletin of Statistics, Bureau of Census and Statistics, Pretoria, March, 1959.

Although there can be no doubt about the tendency for both whites and non-whites to migrate to urban areas, the farm portion of the rural population shows an interesting difference in the pattern of the shift (Table 8).

The white farm population declined at an average rate of 2.6 per cent per annum over the period in question; in contrast, the rate of decline for the total rural white population (calculated from Table 7) was only 1.1 per cent during the corresponding period.

Table 8. Total farm population in 1950 and 1955.

Year (31st August)	Whites	Non-whites
1950	472,952	2,214,047
1955	411,658	2,494,050
Percentage change	- 13	+ 13
Annual rate - %	- 2.6	+ 2.6

Source: Compiled from Agricultural Census Reports Nos. 24 and 29.

In actual numbers the farm population decreased at an annual rate of 12,200 while the rural population decreased at a rate of 6,400 per annum. This shows that rural towns as well as urban areas may have attracted farm people.

The numbers of non-whites on farms owned by whites increased by 2.6 per cent per annum during the period 1950-1955, while the rate of increase for the rural non-white population was only 0.8 per cent per annum. There is good reason to believe that a large proportion of the flow of non-whites from their tribal areas is to the farms of whites and to rural towns, and that this flow is sufficient (at present) to offset the flow of non-whites from farms and rural towns to the urban areas.

The influence of these shifts in population is clearly noticeable in the changing pattern of employment on farms. Table 9 gives information on employment of whites and non-whites on farms owned by whites for 1950 and 1955.

Table 9. Numbers of white and non-white labourers on farms owned by whites, as on 31st August of 1950 and 1955.

Region	Whites		Non-whites		Number of non-whites per white labourer	
	1950	1955	1950	1955	1950	1955
Area A [Ⓜ]	5,035	2,325	337,906	394,764	67.1	169.8
Rest of the Union	8,789	5,447	298,888	317,215	34.0	58.2
Union Total	13,824	7,772	636,794	711,979	46.1	91.6

[Ⓜ] Comprises the provinces of Transvaal and Orange Free State and the magisterial districts of Mafeking and Vryburg in the Cape Province.

Source: Compiled from Agricultural Census Reports Nos. 24 and 29.

The figures indicate, first of all, that the number of white labourers on farms is small - in absolute terms as well as relative to the number of non-white labourers. And although there were as few as 13,824 white labourers to 636,794 non-white labourers on all farms owned by whites in 1950, still the number of white workers declined by 44 per cent to 7,772 in the space of five years. In contrast, the number of non-whites increased to 711,979, doubling the ratio of non-white workers to white workers.

There is also a substantial difference in the rate at which these changes have taken place in Area A as compared with the

rest of the country. The percentage changes in the number of workers are as follows:

	<u>White workers</u>	<u>Non-white workers.</u>
Area A	- 54.0	+ 17.0
Rest of Union	- 38.0	+ 6.0
Total	- 44.0	+ 12.0

Area A is changing more rapidly. Various factors may have contributed to this situation. Apart from organizational differences resulting from basic differences in geographical and climatic conditions, two of the most important factors were the rapid development of new goldfields in the Western Transvaal and North Western Free State and an equally rapid process of overall economic development in sparsely populated rural areas of the Transvaal and Orange Free State which was triggered by the developments in the gold industry.

Wages: It would be well to keep in mind that the character of the work performed by white workers on farms differs considerably from that of the average non-white worker. White workers more commonly act as assistants to farm-owners, thus performing overseeing and co-ordinating duties rather than heavy manual labour. The latter tasks are performed mainly by non-white workers, although those showing the necessary aptitude are usually promoted to "boss-boy" (foreman) and are also employed to operate farm machinery such as tractors, lorries, etc.

Wages paid to farm workers (inclusive of payments in kind) showed important increases during the period 1950-1955, but were still relatively low (Table 10). The data for the four major corn producing areas are listed separately; wage rates for both white and non-white workers were higher in the Transvaal areas than in the Orange Free State. Despite the higher percentage increases over the 5 year period for the Free State areas compared with the Transvaal areas, the spread between the highest and lowest average rates remained almost unchanged.

Table 10. Average wages for the month of August, 1950 and 1955 (£).

Region	White workers			Non-white workers		
	1950	1955	% increase	1950	1955	% increase
Transvaal Highveld	24.85	38.86	56.4	3.23	4.00	23.8
Western Transvaal	30.19	42.92	42.2	3.28	4.21	28.4
North Western Free State	16.90	32.09	89.9	2.44	3.59	47.1
North Eastern Free State	20.14	38.04	88.9	2.52	3.30	31.0
Area A	23.80	37.10	55.9	2.83	3.66	29.3
Rest of the Union	19.10	32.50	70.2	3.88	5.05	30.2
Total average	20.79	33.87	62.9	3.16	4.28	35.4

Source: Compiled from Agricultural Census Reports Nos. 24 and 29.

It is also important to note that in all areas the percentage increase in wages of white workers exceeded by far the

corresponding figures for non-white workers. This is in line with expectations based on the pattern of population shifts described earlier.

Table 10 furthermore reflects higher wages for white workers in Area A than in the rest of the Union. This also is consistent with the pattern described earlier, namely a more rapid decline in the number of white workers in Area A combined with more attractive alternative employment opportunities.

The opposite is true in respect of non-white workers; namely, wage rates were lower in Area A than in the rest of the Union. This is mainly due to the fact that Asiatics and Coloureds (people of mixed descent) normally receive higher wages than Bantu workers and that the first mentioned group is numerically of much greater significance in the rest of the Union than in Area A.

An important fact which emerges from the preceding examination is that the volume of employment has increased in spite of an increase in capital investment in agriculture. It is, therefore, not clear to what extent capital has replaced labour in the factor-mix. It is difficult to believe that the volume of farming activities increased to such an extent that all of the labour displaced by labour-saving machinery, and more, could be absorbed by other branches of agriculture. Neither could this phenomenon be explained in terms of differences in productivity between the out-going and in-coming labour, even though many farm labourers eventually move to rural towns and cities while they are replaced by virtually untrained help on the farm. It is more likely that a certain amount of superfluous



labour is present in agriculture, and that this has a detrimental effect upon the cost structure of agriculture.

It should be pointed out that the increased mechanization was confined almost exclusively to the process of cultivation, and that the picking process in harvesting operations is still performed mainly by manual labour. Recent estimates by the Division of Economics and Markets indicate that harvesting operations took up an average of 60 per cent of the total labour required in the complete process of producing corn.³ In view of the problems experienced by farmers in obtaining enough seasonal labour at harvest time, it is likely that the permanent labour force "carries" a certain number of workers for the main purpose of ensuring more dependable help at harvest time. These workers will be under-employed during the nine months of the year in which no harvesting is done. Since specialized harvesting equipment also has to be "carried" all year in order to be available at harvest time, the question arises whether partially unemployed machinery is cheaper than partially unemployed men. It is therefore of the utmost importance for increased efficiency that the economic aspects of mechanized harvesting be thoroughly explored.

Capital: Attention has been focussed on the rapid rate at which mechanization took place since World War II, and it is to be expected that investment in machinery and equipment represented a major proportion of total gross capital formation in agriculture.

³Möller C.A., "Mechanization of the Harvesting of Maize an Urgent Necessity," Farming in South Africa, Vol. 35, No. 10, January, 1960, pp. 27-28.

It is of interest to compare the volume of gross investment in agriculture with the volume of gross investment in some of the other important branches of the South African economy (Table 11).

Table 11. Gross capital formation in agriculture, mining and manufacturing, 1948 - 1957.

	Agriculture	Mining	Manufacturing	Total for private enterprise
	£million			
1948	44	23	52	280
1949	34	34	33	265
1950	35	46	49	274
1951	65	59	75	401
1952	58	69	32	341
1953	53	59	37	432
1954	60	65	53	474
1955	59	56	84	494
1956	60	54	73	495
1957	63	53	78	541
Total 1948-1957	531	518	566	3,997

Source: Quarterly Bulletin of Statistics, South African Reserve Bank, Pretoria, September, 1959.

Although the pattern changes considerably from year to year, gross capital formation in agriculture for the 10 years

The first part of the document discusses the importance of maintaining accurate records of all transactions. This includes not only sales and purchases but also expenses and income. Proper record-keeping is essential for determining the correct amount of taxes owed and for identifying potential areas for tax optimization.

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1948 - 1957 kept pace with that in mining and manufacturing, even though both mining and manufacturing experienced considerable growth during the period under review. In 1948/49 mining's contribution to the total geographical income of £898.2 million was £93.6 million (or 10.4 per cent), in 1957/58 it was £256.8 million (or 12.9 per cent). The contribution of the manufacturing sector was £195.4 million (or 21.8 per cent) in 1948/49 and £487.5 million (or 24.5 per cent) in 1957/58. The corresponding figures for agriculture are £121.0 million (or 13.5 per cent) and £244.3 million (or 12.3 per cent).⁴

Judging by these comparisons it would seem that in the aggregate agriculture received a reasonable share of total gross investment. It is not clear, however, to what extent this was a voluntary process indicating that agriculture represented an attractive field of investment⁵ or the result of fundamental adjustments which were forced upon farmers by rapid technological changes in agriculture as well as changes in the rest of the economy.

⁴Quarterly Bulletins of Statistics, (op. cit.). Geographical income differs from the more commonly used concept of National Income by the income accruing to Non-Union factors of production - e.g. dividends on foreign capital invested in the Union.

⁵In an article recently published F. Popping has estimated that during the first decade after World War II investors in agriculture received a net return of more than 30 per cent - "Some Features of Capital Investment in Agriculture ...", South African Journal of Agricultural Science, Vol. 2, No. 3, September, 1959.

The Relative Position of Corn within Agriculture:

The gross farm value of the annual corn crop: The relative position of corn within agriculture depends not only on changes in the corn industry itself, but also on developments which take place in various other branches of the agricultural sector. The gross farm value of the annual production of a specific crop is frequently used as an indicator of its relative importance, and in terms of this criterion the relative importance of corn has remained fairly stable. Total farm value declined from 17.10 per cent of the total farm value of all agricultural products during the period 1936/37-1938/39 to 15.17 per cent during 1948/49-1952/53 (Table 12). For the period 1955/56-1957/58 it has remained virtually unchanged at 15.2 per cent. During this period corn was, once again, the most important of all agricultural commodities.

Of the other important field crops wheat returned to almost its pre-war level after a slight decline during 1948/49-1952/53. Sorghums, in contrast, increased slightly in relative importance during the middle period and then dropped to just below their earlier level of importance. Groundnuts (peanuts) is the only one of these crops which maintained a rising level of importance, although, as in the case of sorghums, it is not of much importance in the overall picture.

The relative importance of the four field crops mentioned above, taken together, declined from 24.9 to 24.3 per cent over the period covered. In comparison the relative importance of livestock

Table 12. Relative importance of certain commodities in the total farm value of all agricultural products during the periods 1936/37-1938/39, 1948/49-1952/53 and 1955/56-1957/58.

Commodity	Relative Importance, per cent		
	1936/37-1938/39	1948/49-1952/53	1955/56-1957/58
Corn	17.10	15.17	15.2
Wheat	6.35	5.70	6.2
Groundnuts	0.23	1.50	1.8
Sorghums	1.24	1.40	1.1
Beef Cattle	9.61	8.82	9.7
Sheep	5.79	4.90	5.9
Hogs	2.10	2.47	2.0
Wool	15.21	19.28	14.9
Others [Ⓜ]	42.37	40.76	43.2
	100.00	100.00	100.0

[Ⓜ]Includes no single value exceeding 7.0 per cent.

Source: Calculated from information published in An Abstract of Agricultural Statistics 1958.

increased by the smallest of margins from 17.5 to 17.6 per cent. Wool, due to the record prices which ruled in the early fifties, jumped by more than 4 percentage points in relative importance during 1948/49-1952/53, but then declined to just below the earlier level during the last period.

Number of commercial corn producers: According to recent estimates of the Division of Economics and Markets there are approximately 110,000 white farmers in the Union, of whom 36,000 (or 33 per cent) are classified as commercial corn producers.⁶ This is a clear indication of the wide interest in corn as a cash crop.

Area planted to corn: Another indication of the important place occupied by corn is the fact that the area planted to corn by white farmers e.g. in 1957 amounted to almost 4 million morgen. The total estimated area cultivated by white farmers is placed at 9 million morgen, which means that the area planted to corn represents 45 per cent of the total area cultivated.⁷

Summary:

Certain structural changes in agriculture during the post-war period favoured an expansion of corn production, the two most important factors being a sizeable capital investment in agriculture and a tendency to concentrate more on the production of field crops. Since corn occupied a relatively important place in agriculture, and more specifically among field crops, it is only natural to expect that a good deal of the increased agricultural activity would be concentrated on the production of corn.

⁶Annual Report of the Corn Control Board for 1957/58, p.3.

⁷Annual Report of the Corn Control Board for 1957/58.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for ensuring transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It highlights the need for consistent and reliable data collection processes to ensure the validity of the results.

3. The third part of the document describes the different types of data that are collected and analyzed. It includes information on both quantitative and qualitative data, as well as the various sources from which this data is obtained.

4. The fourth part of the document discusses the various statistical methods and techniques used to analyze the data. It covers topics such as descriptive statistics, inferential statistics, and regression analysis, among others.

5. The fifth part of the document discusses the various ways in which the results of the analysis can be presented and communicated. It includes information on the use of tables, graphs, and charts, as well as the importance of clear and concise communication.

6. The sixth part of the document discusses the various ways in which the results of the analysis can be used to inform decision-making. It includes information on the use of the results to identify trends, patterns, and areas for improvement, as well as the importance of using the results to inform policy and practice.

7. The seventh part of the document discusses the various ways in which the results of the analysis can be used to inform research and development. It includes information on the use of the results to identify new areas for research and development, as well as the importance of using the results to inform the design and development of new products and services.

8. The eighth part of the document discusses the various ways in which the results of the analysis can be used to inform education and training. It includes information on the use of the results to identify areas for improvement in education and training, as well as the importance of using the results to inform the design and development of new educational programs and courses.

9. The ninth part of the document discusses the various ways in which the results of the analysis can be used to inform public policy and practice. It includes information on the use of the results to identify areas for improvement in public policy and practice, as well as the importance of using the results to inform the design and development of new public policies and programs.

10. The tenth part of the document discusses the various ways in which the results of the analysis can be used to inform the private sector. It includes information on the use of the results to identify areas for improvement in the private sector, as well as the importance of using the results to inform the design and development of new products and services.

The Corn Industry after World War II, with Emphasis on the period since 1949/50:

The production of corn is concentrated largely in the central and north-eastern regions comprised of the provinces of Transvaal and Orange Free State. It will be clear from Table 13 below that producers in these two provinces grow almost 90 per cent of the total crop. Producers are usually classified as white farmers, Bantu (coloured) labourers on farms of whites, and Bantu in Bantu areas. The respective contributions of these groups can be observed from the following table :

Table 13. Production of corn by white farmers, Bantu labourers on farms of whites and Bantu in Bantu areas - 1955/56 production year.

Province	White farmers	Bantu labourers on farms of whites		Bantu in Bantu areas	Total
		'000	bags of 200 lb. each.		
Cape	1,270	81		758	2,109
Natal	1,180	274		517	1,971
Transvaal	17,246	1,317		468	19,031
Orange Free State	12,749	1,497		22	14,268
Total	32,445	3,169		1,765	37,379

Source: Agricultural Census Report No. 30.

As indicated earlier the farming activities of white farmers so dominate the commercial aspects of farming that the discussion in the rest of this chapter will deal almost exclusively with them.

Increased Production of Corn:

Reference has been made to the increase in the production of corn since the period just prior to World War II. It is now proposed to examine the geographical pattern of this change and to determine the influence of certain causal factors. For these purposes the Union has been divided into two main areas, Area A and the Rest of the Union. Area A represents the main area where corn is produced and consists of the provinces of Transvaal and Orange Free State and the magisterial districts of Mafeking and Vryburg in the Cape Province. In many instances Area A has been sub-divided into smaller regions, and in Appendix Table 1 a complete list is given of the magisterial districts comprising each of these regions.⁸ Also refer to Chart No. 1 on the following page.

Data on average corn production and yields per morgen are given for the periods 1934/35-1938/39, 1945/46-1949/50 and 1951/52-1955/56 (Table 14). Only two regions, namely the Western Middleveld and Northern Cape, reflect a decline in production over the first time interval. But in all regions the five-year averages for 1951/52-1955/56 are well above the corresponding figures for 1934/35-1938/39. The most spectacular increase, perhaps, occurred in the Western Transvaal where production increased from 1,951,700 bags to 5,210,000 bags. The highest percentage increase (177 per cent) was registered in the Northern Cape. It is interesting to note that the increase in production has been as noticeable in the traditionally

⁸The breakdown is the same as that used for Area A by the Division of Crops and Markets, Department of Agriculture, for purposes of crop estimates.

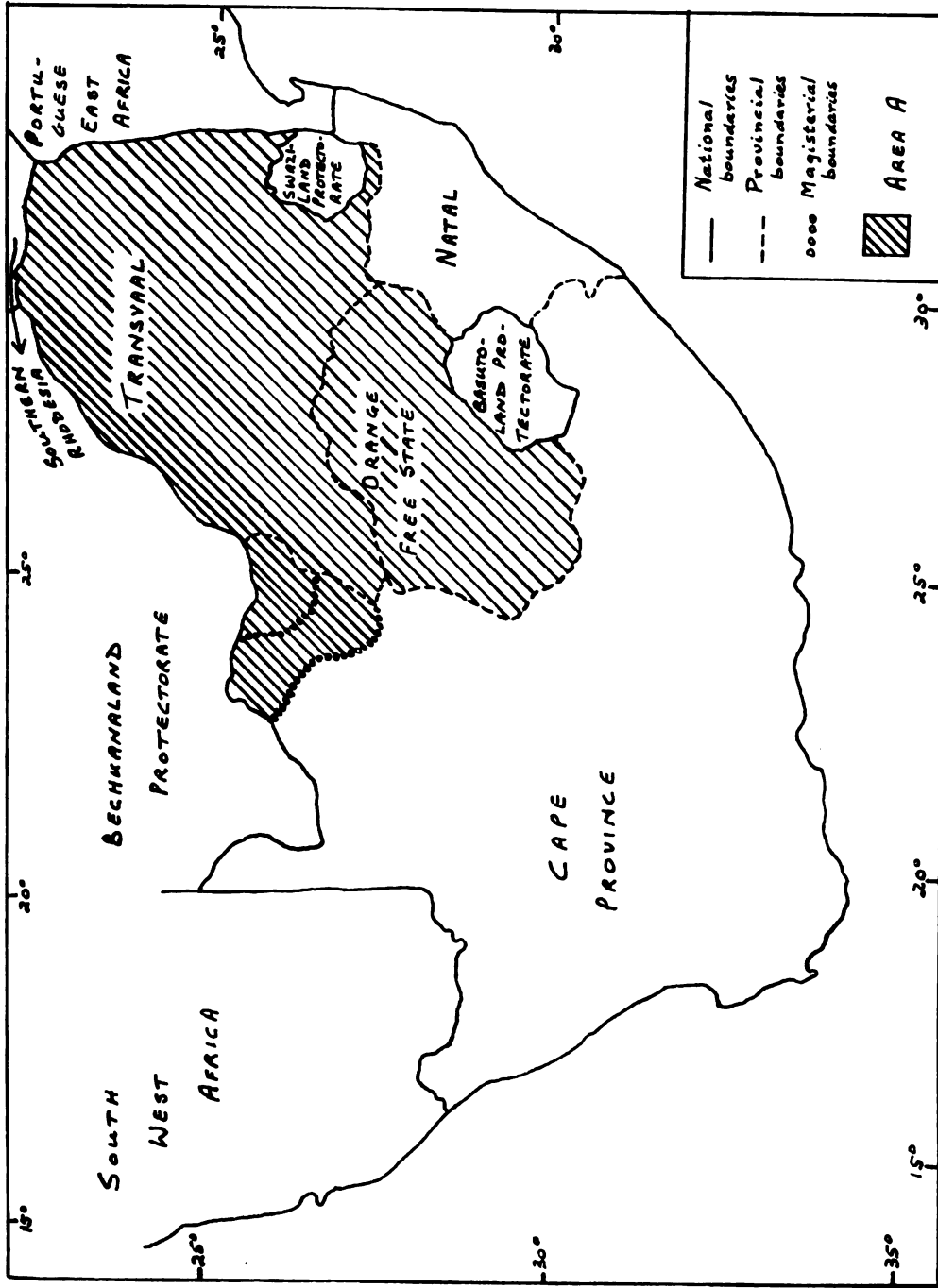


CHART No. 1. MAP OF THE UNION OF SOUTH AFRICA - SHOWING ITS FOUR PROVINCES AND ADJOINING TERRITORIES.

Table 14. Five-year averages of total corn production and yields per morgen in 200 lb. bags (whites on farms of whites only).

Region	1934/35-1938/39		1945/46-1949/50		1951/52-1955/56	
	Average total production '000	Average yield	Average total production '000	Average yield	Average total production '000	Average yield
Transvaal Highveld	3,643.9	8.54	3,727.2	8.13	5,038.7	9.87
South Eastern Transvaal	369.2	5.95	464.9	5.65	525.6	6.49
Lowveld (Transvaal)	146.1	6.37	160.8	6.11	194.9	6.95
Western Transvaal	1,951.7	5.96	2,628.3	6.10	5,210.0	8.70
Rand (Transvaal)	411.0	5.44	428.0	4.87	639.5	6.80
Northern Transvaal	476.8	5.68	582.8	5.08	918.2	7.44
Far Western Transvaal	333.3	4.72	614.2	5.24	908.9	6.03
Western Middleveld (Tvl.)	441.0	5.76	426.4	4.82	750.1	7.45
North Western Free State	3,611.7	6.97	3,870.8	5.55	5,899.6	7.63
North Eastern Free State	2,694.5	4.98	3,387.3	5.57	4,684.1	7.10
Eastern Free State	758.1	7.29	968.7	6.63	787.3	6.51
Southern Free State	451.6	5.26	452.0	3.37	654.8	4.33
(Mafeking) Vryburg) Cape districts	142.9	3.47	228.2	3.37	399.6	4.50
Area A	15,631.8	6.35	17,929.6	5.86	26,611.3	7.64
Rest of Union	2,134.9	7.40	2,097.9	6.73	1,809.9	6.30
Union - Total	17,766.7	6.46	19,827.5	5.88	28,421.2	7.54

Source: Compiled from Agricultural Census Reports.

important areas as in the relatively minor producing areas. However, the bulk of the increased production happened in the four major producing areas, namely North Western Free State, Western Transvaal, Transvaal Highveld and North Eastern Free State. Most of the increase in total production (7.2 million bags of the 8.6 million bags) occurred in these four regions.

It is also significant that the annual rate of increase in most cases obviously has been higher during the second time interval - i.e. between the period 1945/46-1949/50 and 1951/52-1955/56 - than during the first time interval. Early in the fifties there were indications that the domestic demand for corn would shortly exceed the supply unless steps were taken to encourage production.⁹ A special incentive to producers, varying from $4\frac{1}{2}$ pence in 1951/52 to 1 shilling $7\frac{3}{4}$ pence in 1953/54, was therefore included in the producers' price during the marketing seasons 1951/52 to 1955/56.¹⁰ This factor by itself, however, could not have been the main cause of the sustained increase in production; thus a comprehensive analysis is necessary to determine the influence of all the contributing factors.

An increase in the total production can be the direct result of either or both of the following physical causes, namely, an increase in the average yield per morgen or an expansion of the area

⁹Van de Wall G. and E.D. Alvord, A Survey of the Food and Feed Resources of the Union of South Africa, J.L. van Schaik Ltd., Pretoria, 1954, pp. 247-250.

¹⁰Annual Reports of the Board for the marketing seasons 1951/52-1955/56.

on which the crop is grown. In the following paragraphs the factors underlying these variables will be more closely examined.

Increased yields per morgen: With the exception of two relatively unimportant production areas - Eastern and Southern Free State - the average yield per morgen during the five seasons 1951/52-1955/56 stood at a higher level than during any of the other two time periods for which these averages have been computed (Table 14).

The data in this table also indicate that, strangely enough, the average yield per morgen declined in all but three regions over the first time interval - the three regions being the Western Transvaal, Far Western Transvaal and the North Eastern Free State. The increase in average yields referred to in the previous paragraph, therefore, occurred mainly during the second time interval. And, with the exceptions mentioned, this increase in average yield has been more pronounced than what is observed from a direct comparison of the yields during 1936/37-1938/39 and 1951/52-1955/56.

Even so, the figures in the last column of Table 14 indicate clearly that the most important increases in yields occurred in some of the major production areas - 2.6 bags per morgen in the Western Transvaal, 2.1 bags per morgen in the North Eastern Free State, while the North Western Free State was the only area among the six most important areas to register an overall increase of less than 1.3 bags per morgen.

The factors which are most frequently listed as being responsible for the increase in average yields are: a higher degree of mechanization, the increased use of fertilizers, the use of better

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2. The second part of the document outlines the various methods and tools used to collect, analyze, and report data. It highlights the need for standardized procedures and the use of modern technology to ensure the accuracy and reliability of the information gathered.

3. The third part of the document focuses on the role of the audit committee and the external auditors in the oversight process. It details the responsibilities of each party and the collaborative efforts required to identify and address any issues or irregularities.

4. The fourth part of the document discusses the importance of communication and reporting. It stresses that clear and concise reports are crucial for providing stakeholders with the information they need to make informed decisions and take appropriate actions.

5. The fifth part of the document addresses the challenges and risks associated with the audit process. It identifies common pitfalls and provides strategies to mitigate these risks, ensuring that the audit process is conducted in a professional and ethical manner.

6. The sixth part of the document concludes with a summary of the key findings and recommendations. It reiterates the importance of continuous improvement and the need for all parties involved to work together to enhance the effectiveness and efficiency of the audit process.

seed (particularly the introduction of hybrids), and, of course, favourable weather conditions. Although the importance of these factors can be anticipated on purely logical grounds, it is interesting to see what the actual situation has been, particularly with respect to the first mentioned three factors.

a. A higher degree of mechanization: Mechanization represents primarily a substitution of inputs. The most important ways in which it improves the yield per unit of land are:

(1) It greatly facilitates the timeliness of operations. There is no longer any delay in starting ploughing and planting operations because draught animals are in poor condition. Furthermore, if required, operations can be carried on around the clock, thus permitting better use of soil moisture, particularly if the season is late.

(2) It also permits better cultivation during the growing phases of the crop - moisture conservation, weed control, etc. Modern equipment for these purposes is not suitable for use with draught animals.

Before World War II there seems to have existed only a very limited degree of mechanization on farms in general. Very soon after the war farmers came to realize the potential advantages of mechanization and the drive towards this end has continued almost uninterruptedly to the present time.

One of the first studies on the possible effects of increased mechanization of farming operations, particularly with re-

spect to crop production, was published in 1955.¹¹ The findings supported the hypothesis that a higher degree of mechanization would be to the benefit of farmers.

One of the main indicators of the level of mechanization on farms is the number of tractors per farm. From Table 15 it is clear that the number of tractors per farm continued to increase right up to the end of the period covered by the present study. Referring to the total production in the various regions (Table 14), it is once again evident what an important factor this has been in the major corn producing areas.

In the North Western Free State the number of tractors per farm increased from 0.83 to 1.61 during the period 1950 to 1955; in the Western Transvaal from 0.64 to 1.44 per farm; in the North Eastern Free State from 0.62 to 1.30 per farm. In the Transvaal Highveld and the Far Western Transvaal the numbers increased from 0.54 to 0.91 and 0.33 to 0.95, respectively. Truly a very rapid rate of increase ruled in most of the major areas during this period.

A higher degree of mechanization, however, is not only of importance as far as yield per unit of land is concerned; it is also an important factor in determining the area cultivated. This could be the case on two possible counts: firstly, mechanization permits a speedier reaction under favourable ploughing and planting

¹¹ van Wyk, S.P. - Die Ekonomiese Belangrikheid van Meganisasie in die Landbou, Pamphlet No. 340, Department of Agriculture, 1955.

Table 15. Number of tractors on farms of whites.

Region	Number of tractors				Number of tractors per farm		
	1947	1950	1953	1955	1950	1953	1955
Transvaal Highveld	1,939	4,264	6,696	7,763	0.54	0.79	0.91
South Eastern Transvaal	229	612	1,424	1,677	0.21	0.49	0.65
Lowveld (Transvaal)	618	1,235	2,112	2,629	0.33	0.52	0.67
Western Transvaal	832	2,774	5,160	5,910	0.64	1.14	1.44
Rand (Transvaal)	508	912	1,423	1,856	0.20	0.32	0.44
Northern Transvaal	933	2,013	2,821	3,723	0.43	0.61	0.79
Far Western Transvaal	143	559	1,242	1,430	0.33	0.73	0.95
Western Middleveld (Tvl.)	1,153	1,972	2,999	3,987	0.24	0.36	0.46
North Western Free State	2,261	5,321	7,596	8,684	0.83	1.15	1.61
North Eastern Free State	1,865	5,041	8,455	9,469	0.62	1.03	1.30
Eastern Free State	612	1,536	2,073	2,233	0.67	0.92	1.24
Southern Free State	769	1,887	3,094	3,890	0.23	0.39	0.54
Mafeking) Vryburg) Cape districts	142	335	813	1,211	0.19	0.42	0.67
Area A	12,204	28,461	45,908	54,462	0.44	0.69	0.88
Rest of the Union	10,193	19,962	28,702	32,989	0.38	0.54	0.66
Union - Total	22,397	48,423	74,610	87,451	0.41	0.63	0.78

Source: Compiled from Agricultural Census Reports.

conditions, thus enabling the farmer to put more land under crops than before, even with the same precipitation. Secondly, a reduction in the number of draught animals releases land used for grazing which can be placed under crops if this is an attractive course of action. In the following sub-section attention will return to this aspect.

b. The increased use of fertilizer: It is generally accepted today that up to a certain level of application, which may vary from one region to another, the increased use of fertilizer results in higher yields per unit of land. The well-known Spillman production function serves to indicate that this fact has been known for many years, yet in South Africa it would seem that farmers have been very slow in following this lead. It was estimated that in 1947 the rate of application of fertilizer was equal to less than one-quarter the optimal rate - i.e. from 28 - 100 lbs. per morgen instead of 300 - 400 lbs.¹²

Little information is available on the actual rate of application, particularly on a regional basis, but recent information clearly reflects an increasing trend (Table 16).

It is interesting to note that the rate of application increased only slightly in the Eastern Highveld where the level of application had been high already in 1954/55. The slight decline registered in 1955/56 is attributed to an experimental shift to a

¹²Van de Wall, G. and E.D. Alvord, op. cit., p.173.

Table 16. Application of fertilizer - pounds per morgen.[Ⓜ]

Production years	North Western Free State	Western Transvaal	Eastern Highveld
1954/55	145.5	205.8	281.1
1955/56	184.2	231.9	264.5
1956/57	205.0	265.8	294.0
1957/58	230.2	282.9	294.6

[Ⓜ]Unweighted by concentration of N, P, K.

Source: Unpublished data obtained from the Division of Economics and Markets, Department of Agriculture.

more concentrated, and therefore more expensive, mixture as well as to a serious crop failure which occurred in the preceding year.

The North Western Free State and Western Transvaal, however, show marked increases in the relatively low rates which ruled in 1954/55 and both regions registered important increases in average yields per morgen.

In the absence of more detailed information on the actual inputs of fertilizer, particularly since differences in the quality or type of fertilizer are hidden when taking quantity as the only index, an analysis of the total expenditures on fertilizer could also be useful in judging the effects of increased fertilizer application (Appendix Table 2).

The seven regions with the highest total expenditures on fertilizer in 1955/56, viz. Transvaal Highveld, Lowveld, Western Transvaal, Northern Transvaal, Western Middleveld, North Western Free State and North Eastern Free State, are also the seven regions

with the highest yields per morgen for the period 1951/52-1955/56. Furthermore, four out of the six regions showing the highest percentage increases in fertilizer expenditures (in constant pounds), viz. Northern Transvaal, Western Middleveld, Western Transvaal and North Western Free State, are also among the six regions which show the greatest increases in yield per morgen (five-year average of 1951/52-1955/56 over 1945/46-1949/50).

Although the increase in expenditures in constant pounds does reflect fairly accurately the increase in total actual fertilizer application, this increase may be due partially to an expansion in area cultivated. However, only a very small proportion of the increased use of fertilizer in this case could be ascribed to such a cause. From Appendix Table 2 it appears that fertilizer costs (in constant pounds) increased at a rate of approximately 11 per cent per annum, while from Table 5 it is calculated that the area cultivated (excluding fallow land) increased during approximately the same time period by only about 2.6 per cent per annum.

Thus an increased rate of fertilizer application has been a contributing factor to the increased yield per morgen.

✓ c. The use of hybrid seed corn: The experience with hybrid corn in the United States indicates clearly that it can be an important factor in increasing corn yields, if suitable strains are developed. Although the use of hybrid seed corn in South Africa is still rather limited, there has been a noticeable increase in the quantities sold to farmers during the fifties (Table 17).

Table 17. Hybrid seed corn distributed for planting
(bags of 200 lb.).

Marketing years	White	Yellow	Total
1949/50	887	88	975
1950/51	2,671	-	2,671
1951/52	5,915	-	5,915
1952/53	11,104	-	11,104
1953/54	25,120	2,611	27,731
1954/55	19,557	2,400	21,957
1955/56	17,390	749	18,137
1956/57	24,342	3,270	27,612
1957/58	33,796	22,506	56,302

Source: Internal records of the Board.

The temporary reduction in hybrid seed sales during 1954/55 and 1955/56 is due mainly to the fact that the most popular hybrid lost some favour because of its susceptibility to leaf-blight (*Helminthosporium Turcicum*) where humid conditions prevail. New hybrids more resistant to leafblight were successfully introduced in 1957/58.¹³

Very little is known of the geographical pattern in the use of hybrid corn. It is, therefore, impossible to determine the

¹³Annual Reports of the Board for 1956/57 and 1957/58.

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effect of this factor on regional changes in output and average yield. Since hybrid seed has increased from 4.6 to 14.2 per cent of total seed requirements from 1955/56 to 1957/58, it must be beginning to have some effect. These figures also indicate that this factor has hardly begun to exploit its full potential as yet. ✓ It must be regarded as one of the more promising ways in which a higher yield per morgen can be achieved.

d. Other factors: Various other factors may have important effects on yields. Best known of these, and most difficult to pin down, is the weather. Indications are that favourable weather may have been fairly important during the years from 1953/54 onward. But this should not detract from the progress which has been made on the technological side. Judging from the average yields in years of exceptionally high total production, which are presented in Table 18 below, it would seem that favourable weather alone could not be responsible for the higher level of average yields in more recent years.

Another factor of general importance is a change in the method of spacing the rows and also the spacing within the row. The practice of spacing 3' by 3' (or 3' x 2' 6") has been replaced in many areas by a method of spacing the rows 7' apart, with spacing in the row varying from 9" to 18". This has had the effect of not only increasing the number of plants per morgen, but it also permitted better weed control, etc. Farmers have become more conscious of the need for improved methods of cultivation all round.

Table 18. Average corn yields in years of high total production.

Marketing year	Total production (Whites only)	Average yield per morgen planted
1939/40	23,660,352	7.6
1948/49	25,507,770	7.4
1954/55	32,813,948	8.3
1957/58	38,096,592	9.6

Sources: Annual Reports of the Board.

The fact that a higher capital outlay is required as a result of increased mechanization no doubt has influenced farmers to take all reasonable steps to ensure that the best possible results would be obtained under the conditions prevailing.

Expansion in area planted: There are a number of factors which may have contributed to the increase in total morgen planted to corn. A few of these possible causes will be discussed after the regional pattern of the increase in area planted has been briefly examined.

The most important increases in actual morgen planted occurred in the Western Transvaal, followed by North Western Free State, North Eastern Free State, Transvaal Highveld, Far Western Transvaal, Southern Free State and the Northern Cape. (Table 19). It is significant to note that the four established major production areas (based on five-year average of total production 1934/35-1938/39), viz. North Western Free State, Transvaal Highveld, North Eastern Free State and Western Transvaal, also show the biggest increases in area

Table 19. Total morgen planted to corn, whites on farms of whites only - Five-year averages (production years).

Region	Average 1934/35- 1938/39	Average 1945/46- 1949/50	Increase over previous period	Average 1951/52- 1955/56	Increase over previous period
Transvaal Highveld	426,568	457,359	30,791	510,559	53,200
South Eastern Transvaal	62,048	82,341	20,293	80,999	- 1,342
Lowveld (Transvaal)	22,957	26,311	3,354	28,021	1,710
Western Transvaal	326,346	430,820	104,474	598,935	168,115
Rand (Transvaal)	75,504	87,915	12,411	94,090	6,175
Northern Transvaal	83,967	114,776	30,809	123,404	8,628
Far Western Transvaal	70,601	117,170	46,569	150,788	33,618
Western Middleveld (Tvl.)	76,567	88,380	11,813	100,648	12,268
North Western Free State	546,526	696,988	150,462	773,050	76,062
North Eastern Free State	541,145	607,968	66,823	659,461	51,493
Eastern Free State	103,991	146,074	42,083	120,995	- 25,079
Southern Free State	85,805	134,158	48,353	151,309	17,151
Mafeking) Vryburg) Cape districts	41,217	67,691	26,474	88,835	21,144
Area A	2,463,240 [*]	3,057,951	594,711 [*]	3,481,095 [*]	423,144 [*]
Rest of the Union	288,602	311,573	22,971	287,271	- 24,302
Union - Total	2,751,842	3,369,524	617,682	3,768,366	398,842

^{*}Differences due to rounding.

Sources: Compiled from Agricultural Census Reports.

planted since that period. Actually, about 70 per cent of the total increase in morgen planted for Area A occurred in these four regions.

When the changes in morgen planted which occurred during the first interval of time are compared with those during the second time interval, it is observed that only in the South Eastern Transvaal and the Eastern Free State has the rising trend of the morgen planted not been maintained. In these two regions there actually has been a decline in morgen planted to corn. The decline of 1,342 morgen in the South Eastern Transvaal is not important either in absolute terms or percentage-wise and can, therefore, be ignored. The decline of 25,079 morgen in the Eastern Free State, however, represents a decline of almost 20 per cent in morgen planted to corn in that area. It is hard to explain this latter decline in area planted, for it will be seen from information presented later on that such a decline also occurred in the area planted to wheat, groundnuts and sunflower seed - thus it has not meant a shift from corn to any of these cash crops. This could mean a shift from crops to livestock, especially since the number of sheep in this region increased from 336,697 in 1949/50 to 443,363 in 1954/55. A retarding factor, however, is that the number of cattle declined from 188,193 in 1949/50 to 168,835 in 1954/55 and the number of pigs from 11,784 in 1949/50 to 6,431 in 1954/55 (for livestock numbers refer to Appendix Table 3). The changes in livestock numbers, therefore, more or less offset each other.



The expansion in area planted can now be considered in terms of the following possible causes:

a. Improvements in transportation services: An improvement in the transport system or in other marketing facilities could lead to an improvement with respect to market access. There were, however, no major changes in this category, and its overall importance would be doubtful in any case.

Because of the fact that the producers' price is the same in all regions, it is only the distance from the farm to the nearest railhead that is of importance to farmers. No new railroad lines of significance in this respect have been constructed during recent years in any of the regions concerned.

b. The development of new regions and the introduction of cash crops in extensive cattle farming regions: It was mentioned earlier that about 70 per cent of the total increase in morgen planted in Area A during the period under discussion, occurred in the four traditional major production areas. For the second interval of time the corresponding figure actually amounts to 80 per cent. This indicates that the development of new regions could not have been a major factor in expanding the total morgen planted to corn.

Details on the total number of cattle, sheep and pigs, respectively, owned by white farmers in 1949/50 and in 1954/55 are shown in Appendix Table 3. In terms of the total number of cattle per region the six most important regions are the North Eastern Free State, Transvaal Highveld, Northern Cape, Western Middleveld, North



Western Free State and Northern Transvaal. In 1954/55 these regions harboured almost two-thirds of the cattle owned by white farmers in Area A.

The number of cattle per farm may give a better idea of the importance of this factor in the farm organization than the total number of cattle. Using this criterion, the changes in the six most important cattle regions during the period 1949/50-1954/55 plus the Western and Far Western Transvaal regions are compared with the changes in morgen planted to corn in these areas (Table 20).

Only in the case of the Eastern Free State and the Northern Transvaal does the percentage increase in the number of cattle per farm exceed the increase in the average morgen planted to corn per farm. The substantial percentage increase in the morgen planted in the other six regions exceeds the increase in the number of cattle by anywhere from 16 to 42 percentage points. This indicates that whether cattle farming has been of much importance or not, there has occurred a major increase in the morgen planted to corn per farm. Although the Northern Cape serves as an outstanding example of instances where cash crops have been introduced in extensive cattle farming regions, ample evidence exists to show that the increase in morgen planted by no means was limited to important cattle farming regions.

Table 20. Percentage changes in the average number of cattle per farm owned by whites and percentage changes in average number of morgen planted to corn.

Region	Number of cattle per farm in 1954/55	Percentage of number in 1949/50	Morgen planted to corn per farm - 2-year average 1954/55-1955/56	Morgen as % of average morgen planted 1949/50-1950/51
Northern Cape	251.3	109.5	58.3	125.1
North Eastern Free State	96.5	101.6	94.2	120.2
Eastern Free State	93.8	114.4	64.9	108.2
Northern Transvaal	81.1	114.1	29.0	112.0
Lowveld	74.0	104.2	7.8	109.9
North Western Free State	73.7	112.2	156.0	130.0
Western Transvaal	69.6	103.6	161.9	146.0
Far Western Transvaal	66.2	103.3	108.9	121.0

c. Changes in relative prices of cash crops and areas planted to each: The following cash crops could be regarded as competitive with corn: wheat, kaffircorn, groundnuts and sunflower seed. Changes in the producers' prices of these commodities from about 1950 to about 1955 indicate that corn prices improved slightly relative to wheat and very considerably relative to groundnuts and sunflower seed, while its position relative to kaffircorn weakened somewhat (Table 21).

• $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

• $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$

• $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$

• $\frac{1}{4} \times \frac{1}{8} = \frac{1}{32}$

• $\frac{1}{8} \times \frac{1}{8} = \frac{1}{64}$

• $\frac{1}{8} \times \frac{1}{16} = \frac{1}{128}$

• $\frac{1}{16} \times \frac{1}{16} = \frac{1}{256}$

• $\frac{1}{16} \times \frac{1}{32} = \frac{1}{512}$

• $\frac{1}{32} \times \frac{1}{32} = \frac{1}{1024}$

• $\frac{1}{32} \times \frac{1}{64} = \frac{1}{2048}$

• $\frac{1}{64} \times \frac{1}{64} = \frac{1}{4096}$

• $\frac{1}{64} \times \frac{1}{128} = \frac{1}{8192}$

• $\frac{1}{128} \times \frac{1}{128} = \frac{1}{16384}$

• $\frac{1}{128} \times \frac{1}{256} = \frac{1}{32768}$

• $\frac{1}{256} \times \frac{1}{256} = \frac{1}{65536}$

• $\frac{1}{256} \times \frac{1}{512} = \frac{1}{131072}$

• $\frac{1}{512} \times \frac{1}{512} = \frac{1}{262144}$

• $\frac{1}{512} \times \frac{1}{1024} = \frac{1}{524288}$

• $\frac{1}{1024} \times \frac{1}{1024} = \frac{1}{1048576}$

• $\frac{1}{1024} \times \frac{1}{2048} = \frac{1}{2097152}$

• $\frac{1}{2048} \times \frac{1}{2048} = \frac{1}{4194304}$

• $\frac{1}{2048} \times \frac{1}{4096} = \frac{1}{8388608}$

• $\frac{1}{4096} \times \frac{1}{4096} = \frac{1}{16777216}$

• $\frac{1}{4096} \times \frac{1}{8192} = \frac{1}{33554432}$

• $\frac{1}{8192} \times \frac{1}{8192} = \frac{1}{67108864}$

Table 21. Indices of two-year averages of producers' prices for corn, wheat, groundnuts, sunflower seed and kaffircorn (1954/55-1955/56 as percentages of 1949/50-1950/51).

Corn	119
Wheat	117
Groundnuts	99
Sunflower seed	101
Kaffircorn	124

Source: Calculated from information contained in An Abstract of Agricultural Statistics 1958.

The prices of all these commodities but kaffircorn were controlled by boards similar to the Corn Control Board. The market for kaffircorn was free and subject to considerable fluctuation.¹⁴

In view of the changes in producers' prices reflected above, the net change in morgen planted to the four competitive crops has been calculated and compared with corn (see Appendix Table 4). In four regions the morgen planted to other crops showed a decline as against an increase in the morgen planted to corn; in seven regions the area planted to other crops as well as to corn expanded; while in two regions the area planted to other crops as well as to corn declined. Only in the Eastern Free State is the decline in corn significant. The explanation of this decline appears to lie in a shift away from cash crops to livestock.

¹⁴For the 1957/58 season a pool scheme on a national basis was administered by the Corn Control Board; this was replaced with a floor price scheme in 1958/59. Refer to Annual Report of the Board for 1957/58.

For Area A in total the increase in morgen planted to corn (454,323) was more than four times as much as that for groundnuts (108,745), while the increase in area for sunflower seed (2,894) is negligible. It is clear that the reduction in area for wheat (3,519) and kaffircorn (71,529) could not have been the main factor which made possible such an important expansion in area for corn and groundnuts. It must have been the result mainly of a reduction in grazing land.

A quick comparison reveals that while the total area under field crops increased by 1,937,000 morgen from 1945/46 to 1954/55, (Table 5), the area planted to corn increased by 959,000 morgen.¹⁵ Even if allowance is made for a certain degree of shifting land away from other crops to corn, it would appear that a large proportion of the increase in the total area under field crops could be explained by the increase in area planted to corn.

Gross returns from corn relative to those from competing cash crops: Since the effects of changes in yields, prices and technology are reflected in the returns per morgen realized, it would be interesting to compare the position of corn with that of the competing cash crops discussed previously. Unfortunately too little information is available to calculate net returns per morgen, but in the absence of a refined figure, the changes in gross returns per morgen are a rough indicator of changes in the profitability of

¹⁵Annual Report of the Board for 1957/58.



growing the various crops. On this basis it would seem that corn was in a relatively favourable position (Table 22).

Table 22. Average gross returns per morgen planted in 1954/55-1955/56 as percentage of the figures for 1949/50-1950/51.

	Wheat	Kaffir-corn	Ground-nuts	Sunflower seed	Corn
Transvaal Highveld	124.2	139.0	87.7	112.4	134.3
South Eastern Transvaal	106.0	114.7	80.7	93.5	127.1
Lowveld	120.5	33.0	159.1	121.6	156.1
Western Transvaal	82.4	107.1	64.4	99.2	150.8
Rand	107.0	180.9	100.4	103.4	138.4
Northern Transvaal	170.0	370.8	221.0	204.0	322.2
Far Western Transvaal	127.1	139.9	88.4	102.6	124.2
Western Middleveld (Tvl)	144.2	271.2	140.4	114.9	165.4
North Western Free State	126.0	145.8	103.6	113.9	136.0
North Eastern Free State	146.8	165.5	126.5	109.7	128.0
Eastern Free State	129.8	103.4	22.2	105.3	98.3
Southern Free State	61.1	87.9	105.1	64.9	119.2
Northern Cape	258.0	105.9	93.6	89.2	119.2

Source: Calculated from basic information on production contained in Agricultural Census Reports Nos. 24, 25, 29 and 30, and prices published in An Abstract of Agricultural Statistics, 1958.

The results for the Northern Transvaal should be ignored, because, except in the case of wheat, average yields during the base period were abnormally low and, therefore, not suitable for the present purpose. In the following regions the area planted to a specific crop is so small that the change in gross returns per morgen planted to that crop had best be ignored also, e.g. ground-nuts in the cases of South Eastern Transvaal, North Eastern and Eastern Free State; sunflower seed in the Eastern Free State; and wheat in the Northern Cape.

Taking into consideration the qualifications set out above, the position is as follows:

In four regions the largest increase in gross returns per morgen occurred with corn, while it was second largest in another five regions - beaten out of first place in four instances by the less important and more risky crop in terms of price, namely kaffir-corn. Reference to Appendix Table 4 will show that six of these nine regions were among the seven regions which reflected the largest increases in morgen planted to corn. While it is not a factor proper the increases in gross returns per morgen serve to illustrate that corn represented an attractive alternative to other cash crops.

The reduction in price uncertainty: The effects of a reduction in price uncertainty on the planning of production have received attention in many discussions of the case for government interference in agriculture. In his Forward Prices for Agriculture¹⁶ D. Gale

¹⁶University of Chicago Press, Chicago, 1947.

Johnson presents a thorough discussion of the problems which follow from price uncertainty. The point is made that resource efficiency will be improved by a reduction in price uncertainty, because it will improve farmers' price expectations and reduce capital rationing.

To the extent that the Marketing Act of 1937 created a framework for the operation of boards of control in respect of major agricultural commodities, it was an important step in the direction of more stable prices for such commodities.

By fixing producers' and consumers' prices for corn and corn products, the Board has eliminated much of the uncertainty which attaches to interseasonal changes in price levels. Although there are no forward prices, the system of employing cost of production estimates based on five year averages tends to even out much of the wider swings and helps to stabilize prices. Farmers could be sure that the possible range in interseasonal prices would be narrowed to a minimum, and that the bottom would not drop out of the market.

This was the situation just after World War II when agricultural production received a great stimulus. At that time the advantages of mechanization were beginning to be appreciated and the general economic outlook was favourable (albeit somewhat inflationary). The determination of the authorities to ensure price stability in agriculture must have provided an added incentive to invest in agriculture. Reference has already been made to the rapid rate of mechanization which manifested itself after World War II, and a large

part of the formation of net capital in agriculture must represent this development. Gross capital formation, particularly since 1951, has been maintained at a rate considerably above that for the years 1948-1950 (Table 23). It is interesting to note that gross investment in machinery and equipment exceeded gross investment in building and construction works in all years but one - i.e. in 1950.

Table 23. Gross capital formation in agriculture 1948-1957 in £ million:

	Nature of capital investment			Total
	Building and construction	Machinery and equipment	Net change in farm inventories	
1948	13	25	6	44
1949	16	24	- 6	34
1950	19	18	- 2	35
1951	21	32	12	65
1952	24	26	8	58
1953	24	27	2	53
1954	26	29	5	60
1955	26	29	4	59
1956	26	28	6	60
1957	27	31	5	63
Total	222	269	40	531

Source: Quarterly Bulletin of Statistics.

The rapid increase in the number of tractors on farms, noted earlier, indicates that an increasing proportion of gross investment should represent depreciation costs or replacement. However, the available estimates of net capital investment in agricultural machinery and equipment differ to such an extent that it is difficult to express this factor with any degree of confidence (e.g. the Division of Economics and Markets¹⁷ estimated net investment in this field for 1955 at £14.5 million, while F. Popping¹⁸ correspondingly estimated it at £5.9 million).

The price policy of the Corn Control Board certainly was not the sole factor responsible for the sustained rate of capital formation, but it must have been an important factor, particularly since corn occupies such a dominant role among the cash crops.

Variability of production: A significant feature of corn production in the Union of South Africa is the wide fluctuations which occur, not only in individual regions, but for the country as a whole (Table 24).

Only one of the important producing regions, namely the Eastern Highveld, enjoys a high degree of stability of production. In the other three major producing regions Western Transvaal and Northern Cape, North Western Free State and North Eastern Free State

¹⁷Fact Paper No. 60, (Supplement to Digest of South African Affairs), Public Information Service, Pretoria, June 1958.

¹⁸F. Popping, op. cit.

Table 24. Fluctuation of corn production on farms of whites during the marketing seasons 1949/50-1958/59.

Region	1949/50 - 1958/59	
	Average production ('000 bags)	Coefficient of variation (per cent)*
Eastern Highveld	5,156	10.69
South Eastern Transvaal and Lowveld	887	10.93
Northern Transvaal	818	45.59
Rand and Western Middleveld	1,478	34.49
Western Transvaal and Northern Cape	7,511	47.32
North Western Free State	6,275	32.15
North Eastern Free State	4,629	23.52
Eastern Free State	793	25.45
Southern Free State	701	45.58
Area A	28,246	23.07
Rest of the Union	2,069	14.13
Union - total	30,315	21.21

*Trend has not been removed from the basic data and the coefficients for certain areas, e.g. the Western Transvaal, are therefore overstated.

Source : Annual Report of the Corn Control Board for 1958/59.

production fluctuates to a considerable extent - the respective coefficients of variation ranging from 47.32 to 23.52 per cent.

The wide fluctuations in production have important ramifications. Firstly, they underline the necessity for a proper storage program to even out irregularities in supply. Secondly, they indicate that in most major corn producing areas a substantial degree of uncertainty attaches to the cash income to be derived from corn. With the increased capital investment in farming, farmers who depend heavily on corn would seem to be quite vulnerable.

The most important cash crop after corn is wheat (refer Table 12). Statistical studies have indicated, however, that the variability of wheat production is "generally considerable greater" than that for corn.¹⁹ The best alternative to farmers would, therefore, seem to be spreading the risk through diversified farming systems.

Factors operating on the demand side:

The total domestic consumption of corn in South Africa is divided between direct (or human) consumption and indirect consumption in the form of feed, seed and industrial usage. Of these, human consumption is still by far the most important (Table 25). The estimate of total domestic consumption is submitted by the Board to the Division of Economics and Markets (Department of Agriculture). The Division estimates the quantities for human consumption, industrial usage and seed, and then deducts the sum thereof from the total to arrive at the figure for animal consumption.

¹⁹Hofmeyr J.H. and M.E. Woelke, Die Stand van Mielieproduksie en -Navorsing in die Unie van Suid-Afrika, Department of Agriculture, Pretoria, 1958, p. 58.

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Table 25. Domestic consumption of corn in South Africa, in total and per capita.

Period	Human consumption		Feed, industrial usage and seed. ³		Total domestic consumption ('000 bags)
	Quantity ('000 bags)	Per capita (bags)	Quantity ('000 bags)	Per capita (bags)	
1935/36-1939/40	12,500	1.28	2,010	0.24	14,510
1950/51	15,500	1.25	9,589	0.77	25,089
1951/52	16,000	1.26	11,665	0.92	27,665
1952/53	16,200	1.25	11,303	0.87	27,503
1953/54	16,300	1.24	7,747	0.59	24,047
1954/55	16,300	1.21	9,092	0.68	25,392
1955/56	16,400	1.20	10,828	0.79	27,228
1956/57	16,400	1.18	9,858	0.71	26,258
1957/58	16,500	1.16	10,937	0.77	27,437
1958/59	17,500	1.21	13,156	0.91	30,656

³According to estimates prepared by the Board for submission to the FAO the quantities used for feed in recent years represent at least about 85 per cent of this total.

Sources: (1) An Abstract of Agricultural Statistics.
(2) Annual Reports of the Board.

Total consumption remained fairly stable over most of the period 1951/52-1957/58. The quantities used as feed, etc. showed a substantial increase over 1936/37-1938/39 but this consumption too seems to have levelled off during the fifties, and thus caused total

• $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

• $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$

• $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$

• $\frac{1}{4} \times \frac{1}{8} = \frac{1}{32}$

• $\frac{1}{8} \times \frac{1}{8} = \frac{1}{64}$

• $\frac{1}{8} \times \frac{1}{16} = \frac{1}{128}$

• $\frac{1}{16} \times \frac{1}{16} = \frac{1}{256}$

• $\frac{1}{16} \times \frac{1}{32} = \frac{1}{512}$

• $\frac{1}{32} \times \frac{1}{32} = \frac{1}{1024}$

• $\frac{1}{32} \times \frac{1}{64} = \frac{1}{2048}$

• $\frac{1}{64} \times \frac{1}{64} = \frac{1}{4096}$

• $\frac{1}{64} \times \frac{1}{128} = \frac{1}{8192}$

• $\frac{1}{128} \times \frac{1}{128} = \frac{1}{16384}$

• $\frac{1}{128} \times \frac{1}{256} = \frac{1}{32768}$

• $\frac{1}{256} \times \frac{1}{256} = \frac{1}{65536}$

• $\frac{1}{256} \times \frac{1}{512} = \frac{1}{131072}$

• $\frac{1}{512} \times \frac{1}{512} = \frac{1}{262144}$

consumption to level off. It is not clear at this stage whether the noticeable increase in consumption during 1958/59 represents a permanent or only a temporary change.

The total quantity consumed is made up of quantities retained on farms and commercial purchases by both the farm and non-farm sections of the public. The quantities retained on farms represent a small percentage of total consumption, and an even smaller percentage of total production (Table 26). There is a noticeable decline in the annual quantities retained on farms in Area A, while the figure for Area B fluctuates considerably. Although Area A

Table 26. Quantities of corn retained on farms (thousand bags, 200 lb. each).

Period	Retained in Area A.	Retained in Area B.	Total	Quantity retained as % of consump- tion.	Quantity retained as % of produc- tion.
1949/50- 1951/52	2,850	3,171	6,021	22.5	22.3
1952/53- 1954/55	2,484	3,262	5,746	22.2	18.3
1955/56- 1957/58	1,871	3,606	5,477	20.1	13.9
1955/56	2,067	3,450	5,517	19.9	14.7
1956/57	1,719	2,510	4,229	16.0	11.3
1957/58	1,826	4,859	6,685	24.1	15.3

Source: Annual Reports of the Board (percentages calculated by writer).

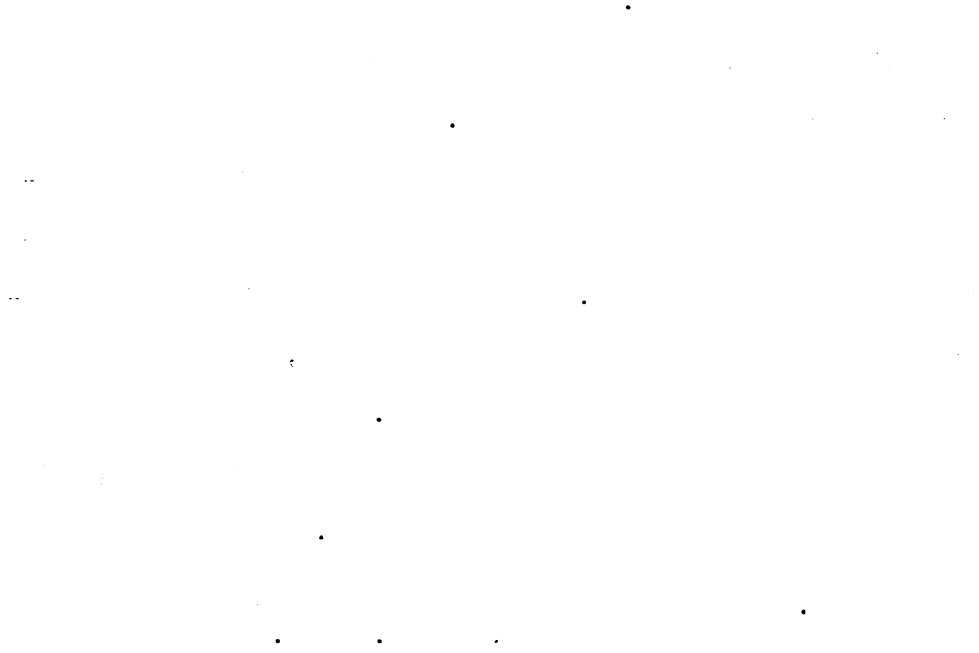


Figure 1: Scatter plot showing the relationship between the number of employees and the number of accidents.



Figure 2: Scatter plot showing the relationship between the number of employees and the number of accidents.

Figure 3: Scatter plot showing the relationship between the number of employees and the number of accidents.

produces about 85 per cent of the total crop, in recent years only about 27 - 40 per cent of the total quantity retained on farms relates to this area.

Very little information is available as to the final form of utilization of corn retained on farms. According to the Agricultural Census Report for 1949/50 the position on farms of whites in Area A was as follows: 1,960,000 bags (49.0 per cent) for human consumption; 1,691,000 bags (42.3 per cent) for animal feed; and 347,000 bags (8.7 per cent) for seed. Although the total of nearly four million bags seems grossly out of line with the quantity of 1,684,000 bags for all producers, as calculated by the Board, the percentage split (42.3 per cent for animal feed) would have to be accepted in the absence of any other data on the nature of consumption.

Thus a number of important differences between the situation in South Africa and that in the United States can be observed. Firstly, a much smaller percentage of the crop is retained on farms; secondly, human consumption is the major form of utilization in South Africa while animal consumption is by far the most important in the United States; thirdly - and largely as a result of the aforementioned differences - corn prices in South Africa are not as intimately connected with the prices of livestock and dairy products as in the United States.

Animal Feed: The quantities of corn retained on farms and fed directly to livestock in Area A amount to less than 50 lb. per grown

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities related to the business.

2. It then outlines the various methods and techniques used to collect and analyze data, including surveys, interviews, and focus groups.

3. The document also describes the process of identifying and measuring key performance indicators (KPIs) that are relevant to the business's goals and objectives.

4. Finally, it provides a detailed overview of the reporting and communication process, including the preparation of reports, presentations, and other communication materials.

5. The document concludes by emphasizing the importance of ongoing monitoring and evaluation of the business's performance, and the need for continuous improvement and adaptation to changing market conditions.

6. It also discusses the role of technology in data collection and analysis, and the importance of ensuring data security and privacy.

7. The document further explores the challenges and limitations of data collection and analysis, and provides strategies for overcoming these challenges.

8. It also discusses the importance of ethical considerations in data collection and analysis, and the need for transparency and accountability.

9. The document concludes by providing a summary of the key findings and recommendations, and a call to action for the business to implement these findings and recommendations.

10. Finally, it provides a list of references and resources for further reading and research.

11. The document is intended to provide a comprehensive overview of the data collection and analysis process, and to serve as a guide for businesses looking to improve their performance and make data-driven decisions.

12. It is also intended to provide a framework for the development of a data collection and analysis strategy, and to provide a checklist of key steps and considerations.

13. The document is written in a clear and concise style, and is intended to be accessible to a wide range of business owners and managers.

14. It is also intended to be a practical and actionable document, and to provide a clear path forward for businesses looking to improve their performance.

15. Finally, it is intended to be a valuable resource for businesses looking to stay competitive in a rapidly changing market.

16. The document is a comprehensive and practical guide to data collection and analysis, and is intended to provide a clear path forward for businesses looking to improve their performance and make data-driven decisions.

cattle unit - that is less than one bushel (Table 27). Corn fed to livestock in this manner represents a very small share of the total quantity used as feed, namely less than 1 million bags out of 8-9 million bags. This is such a small quantity that it would seem beyond any doubt that there exist strong economic reasons why farmers prefer to market corn in the grain and not "on the hoof" - in spite of the fact that the prices of slaughter stock increased by 86 per cent and dairy products by 34 per cent from 1948/49 to 1957/58, while corn prices increased by only 31 per cent. Thus, unless some major readjustments in relative prices should occur, or some important form of saving in the cost of producing meat and dairy products materialize, the present situation seems likely to continue.

Table 27. Quantity of corn retained on farms and fed to livestock in Area A.¹

Year	Number of cattle	Number of pigs	Total number in terms of grown cattle units ¹	Quantity used as feed (bags)	Average quantity fed per grown cattle unit (lb.)
1950	4,355,303	343,749	3,892,477	842,000	43.2
1956	4,238,077	357,385	3,585,496	860,000	48.0

¹Assumes that one-half of the quantity retained on farms is used as feed, and that it is fed to cattle and pigs owned by white farmers only.

¹1 Grown cattle unit = 1 animal over 2 years;
 = 2 animals over 1 year but under 2 years;
 = 3 calves;
 = 5 pigs.

Source: Agricultural Census Reports Nos. 24 and 30 for livestock numbers; Annual Report of the Board for 1958/59 for quantities retained on farms.

1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice G. D. C. O'Connell" and "The Hon. Mr. Justice J. J. F. O'Connell".

2. The second part of the document is a list of names and titles, including "The Hon. Mr. Justice J. J. F. O'Connell" and "The Hon. Mr. Justice J. J. F. O'Connell".

3. The third part of the document is a list of names and titles, including "The Hon. Mr. Justice J. J. F. O'Connell" and "The Hon. Mr. Justice J. J. F. O'Connell".

4. The fourth part of the document is a list of names and titles, including "The Hon. Mr. Justice J. J. F. O'Connell" and "The Hon. Mr. Justice J. J. F. O'Connell".

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6. The sixth part of the document is a list of names and titles, including "The Hon. Mr. Justice J. J. F. O'Connell" and "The Hon. Mr. Justice J. J. F. O'Connell".

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With such small quantities being retained and fed to livestock on the farm, the bulk of the total estimated quantity used as livestock feed etc. (shown in Table 25) must enter commercial channels. A significant proportion thereof is probably consumed in the form of balanced rations, since corn constitutes the base of most of these rations. No official estimates for the period up to 1955 are available, but according to information just published the production of balanced feeds declined from 615,500 tons in 1956 to 544,200 tons in 1958²⁰ - a drop of almost 12 per cent. It is not clear, however, whether this change represents a return to normal from abnormally high levels or whether it should be regarded as an indication of more permanent changes in feeding practices.

There are certain important features of the livestock industry in South Africa which may have contributed to the relatively small consumption of corn as stockfeed. The first factor is the distribution of ownership of the total numbers of cattle and pigs, both as between white farmers and Bantu and as between Area A and Area B. Although the Bantu produce only 20 per cent of the total corn crop, they own over 40 per cent of all cattle and over 50 per cent of all pigs - (Table 28). Since Bantu production units are normally very small and not commercialized to any degree, few Bantu farmers could be expected to have corn available for feeding livestock. Their cattle in particular are range farmed and rarely fed.

²⁰ Monthly Bulletin of Statistics, Vol. XXXIX, No. 1, January, 1960.

Table 28. Distribution of ownership of cattle and pigs in South Africa in 1950 and 1955 (thousands).

	C a t t l e				P i g s			
	1950		1955		1950		1955	
	Numbers	% of total	Numbers	% of total	Numbers	% of total	Numbers	% of total
White farmers	6,792	59	6,929	59	699	52	509	45
Bantu on farms of whites	1,371	12	1,292	11	185	14	166	15
Bantu in Bantu areas	3,350	29	3,468	30	466	34	452	40
Total	11,513	100	11,689	100	1,350	100	1,127	100

Source: Agricultural Census Reports Nos. 24 and 29.

Furthermore, less than two-thirds of the cattle and only fifty per cent of the pigs owned by white farmers are to be found in Area A, i.e. the main corn producing area.

The second factor, which is partly evident from Table 28 is that pig numbers are small. With only half a million pigs owned by white farmers, and the numbers actually declining, it is clear that one of the main props in the livestock-feed economy of the United States is of hardly any consequence in South Africa. Judging from the following figures on the consumption of meat, pork is much less important in the consumer diet than either beef or mutton.²¹

		<u>1950.</u>	<u>1955.*</u>	<u>1957.*</u>
Beef and Veal	'000 lb.	860,996	845,508	1,000,419
Mutton	'000 lb.	197,649	290,279	283,945
Pork	'000 lb.	126,415	99,348	109,327

Thirdly, the market for livestock products is limited chiefly to the white population which represents only about 25 per cent of the total population. The purchasing power of the majority of non-whites is too low for them to afford regular consumption of meat and dairy products.

Thus it becomes obvious that the present situation does not encourage the utilization of corn as stockfeed. It would seem unlikely that this could be the result only of an imbalance in

²¹An Abstract of Agricultural Statistics 1958, p. 37 (* unpublished revisions of original figures).

1. The first part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: John Doe, Jane Smith, and Bob Johnson. The addresses are: 123 Main St, 456 Elm St, and 789 Oak St.

2. The second part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Alice Brown, Charlie Green, and David White. The addresses are: 101 Pine St, 202 Cedar St, and 303 Birch St.

3. The third part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Emily Black, Frank Gray, and George Blue. The addresses are: 404 Spruce St, 505 Fir St, and 606 Willow St.

4. The fourth part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Helen Red, Ivan Purple, and Julia Yellow. The addresses are: 707 Ash St, 808 Hickory St, and 909 Sycamore St.

5. The fifth part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Kevin Orange, Lisa Pink, and Mark Silver. The addresses are: 1010 Magnolia St, 1111 Dogwood St, and 1212 Redwood St.

6. The sixth part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Nancy Gold, Oscar Bronze, and Patricia Copper. The addresses are: 1313 Cypress St, 1414 Juniper St, and 1515 Cottonwood St.

7. The seventh part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Quincy Iron, Rachel Nickel, and Samuel Tin. The addresses are: 1616 Palm St, 1717 Olive St, and 1818 Peach St.

8. The eighth part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Tina Lead, Victor Zinc, and Wendy Cadmium. The addresses are: 1919 Apple St, 2020 Pear St, and 2121 Cherry St.

9. The ninth part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Xavier Platinum, Yvonne Silver, and Zachary Gold. The addresses are: 2222 Plum St, 2323 Fig St, and 2424 Grape St.

10. The tenth part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Adam Copper, Brenda Nickel, and Charles Iron. The addresses are: 2525 Walnut St, 2626 Pecan St, and 2727 Chestnut St.

11. The eleventh part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Daniel Tin, Elizabeth Zinc, and Frank Lead. The addresses are: 2828 Almond St, 2929 Hazelnut St, and 3030 Pistachio St.

12. The twelfth part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Grace Silver, Henry Gold, and Irene Platinum. The addresses are: 3131 Coffee St, 3232 Tea St, and 3333 Cocoa St.

13. The thirteenth part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Jack Nickel, Karen Copper, and Larry Iron. The addresses are: 3434 Vanilla St, 3535 Mint St, and 3636 Lemon St.

14. The fourteenth part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: Mary Tin, Norman Zinc, and Olivia Lead. The addresses are: 3737 Orange St, 3838 Lime St, and 3939 Lemonade St.

relative producers' prices or net returns. A unilateral adjustment in corn prices could not be expected to bring about a major change in the basic situation and lead to a rapid increase in the indirect consumption of corn.

Human consumption: Corn is a most important food item in South Africa. According to estimates prepared by the Division of Economics and Markets,²² corn provided 37 per cent of the average per capita calorie intake in 1956, as well as 36 per cent of the protein and 17 per cent of the fat intake (in direct form only, its contribution via animal products has not been included above).

The declining rate of per capita direct consumption is not surprising, since it is generally accepted that with a rising standard of living the starchy foods in the diet will be replaced with protein-rich foods and vegetables. It is surprising, though, that the anticipated rise in per capita consumption of meat and fresh milk, for example, has not been fully realized, despite a noticeable increase in money and real per capita incomes (Table 29).

One possible reason for this situation could be the rather rapid rate at which the Bantu people have been migrating to the cities. This required drastic changes in their diets, which traditionally consist mainly of wild fruits, a little meat, and corn or primary corn products. Moving into the money economy as wage earners (mostly cash wages) must have caused great changes in their

²²The Food Balance Sheet of the Union of South Africa, Union Department of Agriculture, Pretoria, 1959, pp. 1-2.

needs and the mode of consumption. Still they undoubtedly lagged behind the Bantu already in urban centres in taking on new diet patterns.

Table 29. Per capita personal income and per capita consumption of corn, meat and fresh milk in South Africa.

Period	Real personal income (£) [‡]	Corn lb.	Meat lb.	Fresh milk (gall.)
1953/54	77.6	248	93.7	15.0
1954/55	80.5	242	89.8	15.0
1955/56	81.9	240	90.4	15.1
1956/57	84.5	236	98.5	15.1
1957/58	85.2	232	98.3	15.2
1957/58 as percentage of 1953/54	109.8	93.5	104.9	101.3

[‡]Calendar years; information not available for years before 1954; deflator used : Retail price index, 1948 = 100.

- Source: (1) Personal Income figures - calculated from personal income figures in the Quarterly Bulletin of Statistics.
- (2) An Abstract of Agricultural Statistics. (Original estimates for period 1954-1958 have been revised but the corrected figures used here have not been published yet).
- (3) Table 25.

The government continues to subsidize the local consumption of corn notwithstanding the relatively favourable increase in per capita incomes, in recognition that corn is a major food item

in the diet of the lower income groups - Bantu as well as whites. For how long the situation will endure it is impossible to say, but it is not unlikely that the subsidy may be gradually removed. In that event the consumers' prices will rise and some decline in consumption could be expected; although little is known about the actual price elasticity of the demand for corn the demand is certainly not perfectly inelastic. Thus a withdrawal of the subsidy would also affect producers - particularly if the unfavourable situation in the export market remains unchanged.

The subsidy represents that proportion of the Board's margin covering administrative, storage and handling costs which the Government determines not to pass on to the consumer. It is refunded to the Board by the Treasury in respect of all corn sold for domestic consumption. In the years prior to 1952 the subsidy actually exceeded the Board's margin.

Although the subsidy paid by the Government was intended chiefly for the benefit of consumers (as is witnessed by the fact that it was also in effect during years when exports had taken place at considerable profit), producers in recent years have indirectly gained as a result thereof. This can be illustrated as follows:

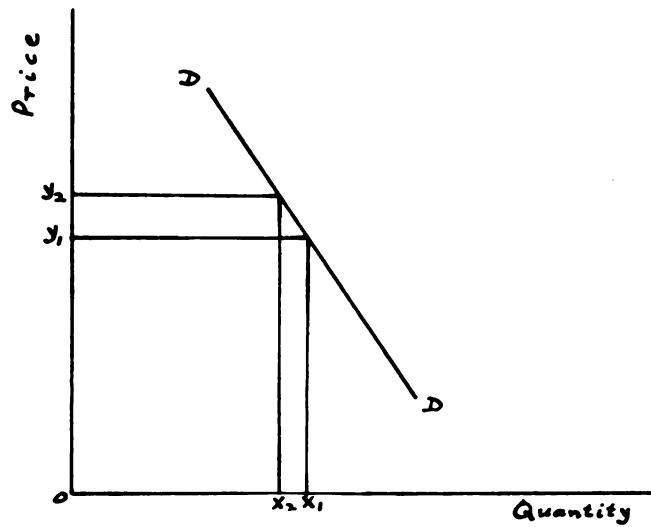


Figure 1. Effect of a Consumer Subsidy on Demand.

Let DD be the demand schedule for corn in the domestic market. Then at price OY_1 , after taking the subsidy into account, the Board will be able to sell the quantity OX_1 . A withdrawal of the subsidy will have the effect of raising the sales price, say from OY_1 to OY_2 , which in turn would reduce the quantity taken off the market to OX_2 , *ceteris paribus*. The difference of $OX_1 - OX_2$ represents the increase in the surplus that has to be exported, and this at present involves a loss. Any increase in the proportion of the export surplus relative to sales for domestic consumption is bound to have an unfavourable effect upon the total returns to producers, since the producers have to carry part of the losses on corn sold by the Board for export. The actual effect will depend upon the elasticity of demand at home and abroad, the loss per unit exported and the proportion of the loss allocated to producers.

A brief examination of recent proposals to increase the consumption of corn: Two important proposals will be examined

below:

a. In 1957 a program was announced in South Africa intended to increase cattle numbers in the commercial corn areas.²³ The idea was mainly to encourage a certain degree of vertical integration. This would mean an increase in corn consumption on the farm and a diversification of farming activities. At the same time it would also increase the production of beef, for which the demand was expected to increase steadily.

The purposes of diversification are usually to increase the stability of income as well as the ability to survive extremely bad years. In this respect attention is drawn to a very clear demonstration of the conditions required for a successful diversification program.²⁴ It indicates that income variability can be reduced through diversification only if the prices, yields and incomes from the products have the proper correlations.

When two enterprises A and B with variances σ_A^2 and σ_B^2 , respectively, are combined, the variance for the total operation, σ_T^2 , becomes:

$$\sigma_T^2 = \sigma_A^2 + \sigma_B^2 + 2\rho\sigma_A\sigma_B \quad \text{where}$$

ρ is the correlation coefficient for the two enterprises and $2\rho\sigma_A\sigma_B$ is the covariance.

²³Annual Report of the Corn Control Board for 1956/57, p.4.

²⁴Heady, E.O., "Diversification in Resource Allocation and Minimization of Income Variability", Journal of Farm Economics, Vol. 34, 1952, pp. 482-496.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and government operations. This section also highlights the role of technology in streamlining record management processes and reducing the risk of data loss or corruption.

2. The second part of the document focuses on the implementation of robust internal controls and risk management frameworks. It outlines the need for regular audits and assessments to identify potential vulnerabilities and ensure compliance with relevant laws and regulations. This section also discusses the importance of fostering a culture of integrity and ethical behavior within the organization to prevent and detect any misconduct.

3. The third part of the document addresses the challenges of data security and privacy protection in the digital age. It emphasizes the need for strong cybersecurity measures, including encryption, access controls, and regular security updates, to safeguard sensitive information from unauthorized access and cyber threats. This section also discusses the importance of data backup and recovery plans to ensure business continuity in the event of a data breach or system outage.

4. The fourth part of the document discusses the importance of effective communication and stakeholder engagement. It emphasizes the need for clear and concise reporting mechanisms to keep all stakeholders informed about the organization's performance and activities. This section also discusses the importance of listening to feedback and addressing concerns promptly to build trust and improve the organization's reputation.

5. The fifth part of the document discusses the importance of continuous improvement and innovation. It emphasizes the need for regular reviews and evaluations of the organization's processes and systems to identify areas for improvement and implement best practices. This section also discusses the importance of investing in research and development to stay ahead of the curve and drive the organization's growth and success.

If diversification consists of adding enterprise B with enterprise A still being carried on at the same level as before - which seems to be indicated by the proposal - the following rules will govern the results of the outcome:

(1) When $\rho = 0$, the covariance term becomes zero. Total variance will thus increase by σ_B^2 , no matter how small it may be.

(2) When $\rho = +1$, the covariance term becomes $2\rho\sigma_A\sigma_B$ and the increase in total variance will be $= \sigma_B^2 + 2\rho\sigma_A\sigma_B$

(3) When $\rho = -1$, the term is negative, $-2\rho\sigma_A\sigma_B$ and total variance will be reduced if $2\rho\sigma_A\sigma_B > \sigma_B^2$

The mere fact of "spreading risk" does not result in more stable income. The proposed method may need further investigation even though it has a certain intuitive appeal.

b. The Board has sponsored research aimed at developing an economical method to manufacture pre-cooked enriched corn-meal products. This was originally intended as a way of enabling urban natives to maintain their consumption of corn. Many of them found the cooking process too time consuming or an impossibility. Not only would domestic consumption of corn be supported, but enriched meal would improve the diets of this group. Preliminary success has been reported²⁵ and it would be of importance if the method could be made operational. It may be a useful manner in which the

²⁵Coetzee, W.H.K. and I.S. Perold, "Pre-cooked and Enriched Cereal Products", South African Journal of Agricultural Science, Vol. 1, No. 3, September 1958, pp. 327-331.

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial data. This includes not only sales and purchases but also expenses and income. The document provides a detailed list of items that should be tracked, such as inventory levels, supplier payments, and customer orders. It also outlines the necessary steps for verifying the accuracy of these records, including regular audits and cross-checking with bank statements.

The second part of the document focuses on the management of cash flow. It explains how to forecast future cash requirements based on current trends and seasonal fluctuations. The document provides a clear methodology for calculating cash flow, taking into account both expected inflows and outflows. It also discusses strategies for optimizing cash flow, such as negotiating better payment terms with suppliers and offering early payment discounts to customers. The importance of maintaining a healthy cash flow is stressed as a key factor for the long-term success of any business.

The third part of the document addresses the issue of debt management. It provides a comprehensive overview of different types of debt, including short-term and long-term obligations, and offers practical advice on how to manage them effectively. The document discusses the benefits of maintaining a good credit rating and the potential consequences of falling into debt. It also provides a step-by-step guide for creating a debt repayment plan, including how to prioritize payments and seek professional advice when needed. The goal is to help businesses understand their debt obligations and take proactive steps to manage them responsibly.

The final part of the document covers the topic of financial reporting. It explains the various types of financial statements that a business should prepare, such as the balance sheet, income statement, and cash flow statement. The document provides a clear explanation of what each statement represents and how they are related to each other. It also offers guidance on how to interpret these statements and use the information to make informed business decisions. The document concludes by emphasizing the importance of transparency and accuracy in financial reporting, as well as the role of professional accountants in ensuring compliance with relevant regulations.

present consumption by Bantu could be maintained in spite of the anticipated economic development which is to be promoted in the Bantu territories and in areas bordering on these territories. This may be a way to counteract the observed negative influence on demand that results from an increase in per capita incomes.

It would also seem that the method could be used to increase the export of corn meal products into interior Africa, where in many countries an urbanization movement similar to that in South Africa is under way.

The Board may wish to take an active interest in promoting such an undertaking in order to ensure that the economy resulting from the process is passed on to the consumer.

Exports: The Union of South Africa can rightly claim to be a traditional exporter of corn. During the early twenties it regularly exported corn - the average for 1923/24-1927/28 amounts to 4,980,000 bags.²⁶ The Government's hopes to become a leading corn exporting country were never fully realized, although it has been among the top three exporting countries in the Free West during the past few years (Table 30).

The prominent position held by Argentina in the early days has changed in 1955-57 to third on the list, close behind South Africa but a long way behind the United States. Like Argentina the Union of South Africa exports a high percentage of the total

²⁶Annual Report of the Board for 1957/58, Annexure II, p. 25.

crop, the exports during 1955-57 being just under 25 per cent of the total crop. This is quite different from the situation in the United States, and serves to underline the potential threat of unprofitable exports to the incomes of corn farmers in South Africa.

Table 30. Three-year averages of total corn exports of South Africa, the United States and Argentina ('000 tons).

Period	South Africa		United States		Argentina	
	Quantity	% of crop	Quantity	% of crop	Quantity	% of crop
1937-39	532	26.8	1,546	2.7	4,897	75.8
1950-52	77	3.0	2,458	3.5	572	2.1
1955-57	838	24.2	3,348	4.4	728	19.5

Source: Calculated from information published in Grain Crops, Commonwealth Economic Committee, London, issues for 1957 and 1959.

During and immediately after World War II world prices were high, but South Africa had very little corn for export; and actually imported corn in some years. The largest volume of exports coincided with the more recent and current period of depressed world prices. The average export price (free alongside coastal elevator) reached a peak of 60/11 (sixty shillings and eleven pence)

per 200 lb. in 1951/52, in 1953/54 it was 40/9 per 200 lb., and since then it has steadily declined to 33/5 per 200 lb. in 1958/59.²⁷

This decline, of course, had an adverse effect on the net realization from exports; instead of a small profit per bag exported in 1953/54, rather heavy losses were incurred during 1955/56 and 1957/58. These losses were met out of the Corn Stabilization Fund - established in 1954. Producers, consumers and the Government have since contributed to the Fund. Since the rate at which producers have to contribute to the Fund is strongly influenced by the estimated losses on export for the current season, the net returns of producers are also directly affected by changes in the export situation. The unfavourable turn of events is clearly illustrated in Table 31 and does not require further comment.

²⁷Annual Reports of the Corn Control Board for 1951/52, 1953/54 and 1958/59.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is crucial for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for consistent data collection procedures and the use of advanced analytical techniques to derive meaningful insights from the data.

3. The third part of the document focuses on the role of technology in data management and analysis. It discusses how modern software solutions can streamline data collection, storage, and analysis, thereby improving efficiency and accuracy.

4. The fourth part of the document addresses the challenges associated with data management, such as data quality, security, and privacy. It provides strategies to mitigate these risks and ensure that the data remains reliable and secure.

5. The fifth part of the document discusses the importance of data governance and the role of a data governance committee. It outlines the key principles of data governance and the responsibilities of the committee members.

6. The sixth part of the document provides a detailed overview of the data governance framework, including the policies, procedures, and standards that govern the use of data within the organization.

7. The seventh part of the document discusses the role of data in decision-making and the importance of data-driven insights. It highlights how data can be used to identify trends, opportunities, and risks, and to inform strategic decisions.

8. The eighth part of the document discusses the importance of data literacy and the need for training and education. It outlines the key skills and knowledge required for data literacy and the role of training programs in developing these skills.

9. The ninth part of the document discusses the importance of data ethics and the need for responsible data use. It outlines the key principles of data ethics and the role of the organization in promoting ethical data practices.

10. The tenth part of the document provides a summary of the key findings and recommendations of the study. It emphasizes the need for a comprehensive data governance framework and the importance of ongoing monitoring and evaluation.

11. The eleventh part of the document discusses the importance of data security and the need for robust security measures. It outlines the key principles of data security and the role of the organization in ensuring the confidentiality, integrity, and availability of data.

12. The twelfth part of the document discusses the importance of data privacy and the need for transparent data practices. It outlines the key principles of data privacy and the role of the organization in protecting the personal information of its customers and employees.

13. The thirteenth part of the document discusses the importance of data interoperability and the need for standardized data formats. It outlines the key principles of data interoperability and the role of the organization in promoting data exchange and collaboration.

14. The fourteenth part of the document discusses the importance of data innovation and the need for a culture of data-driven innovation. It outlines the key principles of data innovation and the role of the organization in fostering a culture of innovation and experimentation.

15. The fifteenth part of the document provides a final summary and conclusion. It emphasizes the need for a comprehensive data governance framework and the importance of ongoing monitoring and evaluation.

Table 31. Imports and exports of corn and corn products for the periods 1944/45-1948/49 and 1953/54-1957/58.

Season	Imports '000 bags	E x p o r t s		
		Quantity '000 bags	Profit £'000	Loss £'000
1944/45	8	-	-	-
1945/46	1,878	-	-	-
1946/47	3,982	-	-	-
1947/48	216	1,065	243	-
1948/49	-	3,752	3,633	-
..
1953/54	-	2,522	479	-
1954/55	-	7,682	399	-
1955/56	-	10,868	-	1,245
1956/57	-	11,200	-	206
1957/58	-	15,702	-	2,445

Source: Annual Reports of the Board.

The average prices obtained by the Board for white corn remained almost unchanged during the past two seasons, but there was a decline in the price realized for yellow corn (Table 32).

Traditionally, South African white corn has commanded a premium above yellow corn because it is preferred by manufacturers of starch. Since this market is limited, in the case of oversupply the price level is set by the feed market - where white corn is

Table 32. Average prices realized by the Board on export corn (shillings and pence per bag of 200 lb., free alongside coastal elevator).

Season	W h i t e		Y e l l o w	
	Average price	Quantity exported '000 bags	Average price	Quantity exported '000 bags
1957/58	34/3¼	8,283	33/1¼	5,307
1958/59	34/4	4,760	32/0¼	4,389

Source: Annual Report of the Board 1958/59.

definitely inferior to yellow corn. South Africa's offerings of white corn, in contrast with that of yellow corn, constitute an important percentage of the total supply and therefore can have a significant effect on the price level. It was estimated in the Board's Annual Report for 1956/57 that the total requirements of Western Europe and the United Kingdom, for industrial purposes, amounted to one million tons. Against this South Africa's total exports of white corn (in the grain) amounted to 703,000 short tons during the 1956/57 season.²⁸

With respect to the future, the overall position is rather bleak. At its third session in Rome in June, 1958, the F.A.O. Group on Grains concluded that: "Grain production, trade, and consumption trends and the appraisal of factors underlying them

²⁸Annual Report of the Board for 1956/57.

would indicate that surpluses, or the persistence of production in excess of effective demand, may now be considered as a chronic feature of the present world grain economy Independent measures of surplus disposal may, therefore, assume a semi-permanent character and affect an increasing part of the international trade in grains, thus adding to the marketing difficulties now being experienced by exporting countries."²⁹

In the circumstances set out above an improvement in the profitability of exports can result only from an international crisis such as the Korean War or from a drastic reduction in the cost of producing corn. The first possibility is totally unpredictable; and although the second possibility is receiving constant attention it is doubtful whether progress would enable South Africa to gain significantly in its position relative to the U.S.A. It would seem, therefore, that the potential of the local market should be investigated and developed where possible. An outward shift of the local demand curve may be possible, even though the price elasticity of demand is low.

It is sometimes proposed that the surplus which is exported at a loss (presumably yellow corn only) should be made available to stock feeders at reduced prices. In considering such a step the first problem would be to prevent the sale of these quantities from encroaching upon the normal demand at regular prices.

²⁹ Report of Third Session of the F.A.O. Group on Grains (CCP 58/16) Food and Agriculture Organization of the United Nations, Rome, 1958, p.11.

This would be extremely difficult to achieve, in which case it would seem impossible to avoid an overall cut in the Board's selling prices for yellow corn. In such an event the price elasticity of demand would be of major importance in determining the increase in the quantity taken up by stock feeders.

As far as can be ascertained no quantitative studies on the elasticity of the demand for corn in South Africa exist. Although certain differences between the markets for corn as livestock feed in South Africa and the U.S.A. can be expected, it would be interesting to calculate the response of the market using the elasticity of demand for corn in the U.S.A. Various estimates exist, ranging from - 0.60 to - 0.70 per cent.³⁰ Applying the most favourable of these estimates to the local situation which ruled during 1957/58, the following results are obtained:

(1) At 30/- per bag (best grades in large quantities) the Board sold approximately 6,000,000 bags of yellow corn for local consumption. Reducing the price by 1 per cent (i.e. by 3.6d. per bag) would increase consumption by 0.70 per cent, or 42,000 bags. The cost of such an arrangement would be the following:

³⁰ For example: Mehren, G.L., in "Comparative Costs of Agricultural Price Supports in 1949", American Economic Review, Vol. XVI, No. 2, May, 1951, placed the price elasticity of demand for corn at - 0.67.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of financial reporting and auditing. The text notes that incomplete or inaccurate records can lead to significant errors and misstatements, which may have legal and financial consequences for the organization.

2. The second part of the document addresses the challenges associated with data collection and analysis. It highlights that gathering comprehensive data from various sources can be a complex and time-consuming process. However, the benefits of having a complete and accurate dataset are substantial, as it enables more informed decision-making and the identification of trends and patterns. The text suggests that investing in robust data management systems and processes is crucial for long-term success.

3. The third part of the document focuses on the importance of data security and privacy. With the increasing volume of data being collected and stored, the risk of data breaches and unauthorized access has become a major concern. The text stresses the need for organizations to implement strong security measures, such as encryption, access controls, and regular security audits, to protect sensitive information. Additionally, it emphasizes the importance of complying with relevant data protection regulations, such as the General Data Protection Regulation (GDPR), to ensure that data is handled lawfully and ethically.

4. The fourth part of the document discusses the role of data in driving innovation and growth. It notes that data-driven insights can provide valuable information about customer behavior, market trends, and operational efficiency. By leveraging this information, organizations can develop new products, improve existing services, and optimize their internal processes. The text encourages organizations to foster a data-driven culture and invest in the necessary skills and resources to harness the power of data effectively.

5. The fifth part of the document concludes by summarizing the key points discussed and reiterating the importance of a holistic approach to data management. It emphasizes that successful data management requires a combination of accurate record-keeping, effective data collection and analysis, robust security measures, and a commitment to data-driven decision-making. The text concludes by stating that organizations that prioritize these aspects will be better positioned to thrive in a competitive and data-driven environment.

6,042,000 bags @ 3.6d. per bag	£90,630
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Alternative cost:

42,000 bags @ average export loss of three shillings and seven pence per bag	<u>£ 7,525</u>
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Additional loss on disposal of crop if disposed of by domestic price reduction	<u>£83,105</u>
--	----------------

(2) Based on a 5 per cent reduction in price (i.e. one shilling and six pence per bag) the corresponding figures would be:

Increase in local consumption 210,000 bags

Cost on 6,210,000 bags @ 1/6 per bag	£465,750
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Alternative cost:

210,000 bags @ 3/7 per bag	<u>£ 37,625</u>
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Additional loss	<u>£428,125</u>
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Such a course of action could hardly be justified, since the cost of such a program would be out of all proportion to the increase in domestic consumption. Even an increase of 210,000 bags would represent only 4 per cent of the quantity of yellow corn exported during 1957/58.³¹

Unless there is reason to expect a substantial demand elasticity, 3.0 to 4.0, it can safely be said that the one shilling and three pence per bag marketed - which producers had to contribute to the Corn Stabilization Fund during 1957/58 - represented for them the cheapest way of disposing of the surplus production.

³¹Other issues, such as the welfare of consumers, might justify a loss such as this, but then the incidence of the loss will probably have to be shifted from the Stabilization Fund to the Government.

Unless a drastic and disastrous drop in world prices should occur, corn producers would be better off by exporting the surplus at a loss rather than trying to sell it domestically at reduced prices.

The Income Situation:

Earlier discussion makes it clear that corn occupies a very important place in the agricultural production in Area A. It is also the major single source of gross farm income in the representative areas selected by the Division of Economics and Markets for purposes of cost of production studies, namely the Eastern Highveld, North Western Free State and Western Transvaal.

The available information shows that farmers in the Western Transvaal have specialized in corn to a higher degree than those in the other two regions (Table 33), and changes in the price level of corn would most probably have more severe short run effects on farm income in this area. From Table 14 it can be calculated that Western Transvaal contributes only about 20 per cent of the total production of corn in Area A, which indicates that more than 80 per cent of all corn is produced under conditions of a fair degree of mixed farming.

Generally speaking although corn prices are of direct importance to a large percentage of all white farmers in Area A, its impact upon the levels of income is more limited than one would expect. This is confirmed by an analysis based on the group distribution of commercial corn producers in terms of quantities produced. (Note: "Commercial" producers are defined here as those who had sold corn in that particular year).

Table 33. Percentage contributions of various branches of farming to gross farm income in representative areas.

Branch of activity	Eastern Highveld ⁽¹⁾	North Western Free State ⁽²⁾	Western Transvaal ⁽³⁾
Corn	47.6	58.2	75.2
Other crops	12.5	19.8	10.9
Total crops	60.1	78.0	86.1
Dairy	21.6	5.1	5.3
Other Livestock	15.8	16.0	8.0
Total Livestock	37.4	21.1	13.3
Other income	2.5	0.9	0.6
Total income	100.0	100.0	100.0
Average gross income	£4,161	£6,395	£5,220

(1) Production years 1954/55 and 1955/56.

(2) Production years 1952/53 and 1953/54.

(3) Production years 1953/54 and 1954/55.

Sources: (1) For North Western Free State and Western Transvaal - Die Metode van berekening van Mielieproduksiekoste, Pamphlet No. 359, Department of Agriculture, Pretoria, 1958.

(2) For Eastern Highveld - Unpublished figures of the Division of Economics and Markets, Department of Agriculture.

In the years 1948/49-1951/52 the Board made supplementary payments to producers out of the profits realized on corn exported.

Based on information submitted in support of claims by producers in

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in financial reporting.

- It is essential to ensure that all data is properly documented and stored in a secure and accessible manner.
- Regular audits and reviews should be conducted to verify the accuracy and integrity of the information.
- The use of standardized formats and procedures can help streamline the data collection and reporting process.
- Training and education for staff members are crucial to ensure they understand the importance of data accuracy and security.
- Implementing robust internal controls and security measures can help prevent data breaches and unauthorized access.
- Collaboration and communication between different departments are key to ensuring the consistency and reliability of the data.
- The final part of the document provides a summary of the key findings and recommendations for improving the data management process.

2. The second part of the document focuses on the challenges and opportunities associated with data management in the current digital landscape. It highlights the need for innovative solutions and strategies to address these challenges.

- The rapid growth of data and the increasing complexity of data sources present significant challenges for organizations.
- Embracing cloud-based solutions and advanced analytics can provide valuable insights and improve decision-making.
- Investing in data governance and privacy frameworks is essential to protect sensitive information and maintain trust.
- Leveraging artificial intelligence and machine learning can automate data processing tasks and uncover hidden patterns.
- Building a data-driven culture and fostering a mindset of continuous learning and innovation are critical for long-term success.
- The document concludes with a call to action, urging organizations to take proactive steps to address the challenges and seize the opportunities of the data era.

respect of 1951/52, the following frequency distribution is compiled (Table 34).

Table 34. Frequency distribution of white farmers in Area A who marketed corn in 1951/52.

Size group according to quantity produced. (bags)	Number of producers in group	Percentage of total number	Production of group as percentage of total	Quantity marketed by group as percentage of total
1 - 200	10,977	30.80	4.6	3.9
201 - 500	10,259	28.79	13.7	12.2
501 - 1000	7,529	21.13	21.4	20.0
1001 - 2000	4,414	12.38	24.7	25.5
2001 - 3000	1,344	3.78	13.0	13.7
3001 and up	1,116	3.12	22.6	24.7
	35,639	100.0	100.0	100.0

Source: Internal records of the Board.

Nearly 60 per cent of the producers produced 500 bags or less, while their production amounted to only 18 per cent of the total produced and the quantity marketed to only 16 per cent of the total marketed.³² At the opposite end of the scale, about 7 per cent of the producers produced between them over 35 per cent of the total output, and marketed over 38 per cent of the total quantity.

³²It is possible that some producers with small claims did not bother, so that there are even more with small production than indicated.

The fact that a farmer produces only a small quantity of corn does not prove that he is a small farmer or that he necessarily is a low-income farmer. It would seem likely, though, that the majority of the 21,236 commercial farmers who produced less than 500 bags in 1951/52 are dependent on corn as their main source of cash income. The socio-economic nature of the problem faced by these farmers can be illustrated as follows:

Assuming the set-up in Table 34 and that 25 million bags of corn will be marketed, then an increase of one shilling per bag in the price of corn leads to an increase of £1,250,000 in total cash income. This additional income would be distributed as follows:

Size group according to quantity produced (bags)	Group's share in increased cash income (£)	Increased cash income per individual farmer (£)
1 - 200	48,750	4.44
201- 500	152,500	14.86
501 - 1000	250,000	33.20
1001 - 2000	318,750	72.21
2001 - 3000	171,250	127.42
3001 and up	308,750	276.66

Those farmers who each produced 2000 bags or less would receive an additional cash income ranging from 7/6 per month to £6 per month. This is a negligible increase per household, even

though the aggregate of their shares would amount to £770,000 or 62 per cent of the total increase in cash income. The relatively few large producers would gain the most from such an increase in price.

Similarly, the small number of large producers would also gain handsomely from measures taken by the Board to stabilize corn prices at reasonable levels during periods of prolonged surplus production such as South Africa has experienced in recent years.

In view of the circumstances set out above, the Board's policy of maintaining relatively stable prices at reasonable levels has encouraged rather than corrected inequalities in the distribution of personal incomes. It would seem a crude and rather ineffective way to cure the problem of low incomes in farming which is frequently presented as the most pressing problem of the day.

SUMMARY.

The most important characteristics of the corn industry in South Africa which emerge from the preceding investigation and discussion are the following:

(1) Corn is by far the most important field crop produced in the Union and it is mostly produced as a cash crop.

(2) Since it is very generally grown in Area A, there are many small production units and relatively few large units completely specialized in the production of corn.

(3) From these observations it can be concluded that the price policy of the Corn Control Board has a direct effect on the cash income position of most farmers in Area A, who in turn represent an important proportion of all farmers in the Union. However, the average effect at individual levels is too small to permit manipulating corn prices to solve the problem of low-income farmers.

(4) A remarkable expansion in the total production of corn has taken place since 1949/50, the increased output being the combined effect of an increased yield per morgen and an expansion in the area planted to corn. The most important causes of the former were increased mechanization on farms, higher fertilizer application and increased use of hybrid seed corn. The expansion in area planted was not so much the result of shifting land away from other field crops to corn as of an expansion in total area cultivated. The main reasons the area planted expanded out of proportion to that for other field crops were: a favourable situation in respect of producer prices relative to competing cash crops, and a relatively favourable position in respect of gross returns per morgen which resulted chiefly from favourable prices and increased yields per morgen. A feature of the expansion in area planted, furthermore, is that about 70 per cent of the total increase in morgen planted to corn occurred in the four major corn producing regions.

Similarly the increase in the total production of corn by white farmers occurred mainly in the established corn producing regions (84 per cent of the total increase took place in the four major producing regions). All the other regions, except one, also show important percentage increases in production since the period 1945/46-1949/50.

(5) Despite the increased production of corn, the crop is still subject to wide fluctuations from one year to the next. This remains a cause of uncertainty to farmers who, because of increased capital investment, have greater need for stable cash incomes.

(6) While production increased significantly, the total domestic consumption of corn increased only slightly since 1949/50. The result has been a steadily growing surplus which has to be exported. The most important form of consumption is still direct human consumption. This factor, however, tends to reduce the price elasticity of demand for the total domestic market. Corn, as a source of energy, constitutes a very important part of the human diet. The quantity of corn consumed as livestock feed has shown a tendency to level off in recent years, after a period of noticeable increases.

Indications are that very little corn is retained and fed directly to livestock on farms. An important reason for this tendency is that a relatively small proportion of the total cattle numbers are owned by white farmers in the major corn producing

areas. The same also applies to pigs, but their actual numbers are so small that it is doubtful whether they would be of real significance even if the opposite were true.

(7) In recent years the surpluses of corn have been exported at increasing unit losses. The losses on exports are defrayed from the Corn Stabilization Fund, to which corn producers as well as consumers and the government have been contributing.

(8) In spite of the continued and unprofitable surplus production of corn, no quantitative restrictions on production or marketings by producers have been imposed or would seem to be in the offing.

CHAPTER III.

A DESCRIPTION AND EVALUATION OF CORN CONTROL PROGRAMS IN THE UNION OF SOUTH AFRICA.

In Chapter II the developments in the corn industry, particularly since 1949/50, have been examined. Except for passing references little has been said about government intervention in the production and marketing of corn. In this chapter the evolution of government programs to regulate and support the corn industry will be traced, and the results achieved will be evaluated against the background of developments described in Chapter II.

Historical Background to 1937:

Until 1924 corn production in South Africa was just about sufficient to provide for domestic needs. Attractive prices in the world market during the period 1924-1928 greatly stimulated production and kindled the hope that the country might develop as a major exporter of corn.¹ The government supported the idea and established a system of grain elevators. These were operated by the South African Railways and Harbours Authorities with a view to speeding up the handling and transportation of export corn.² Grading standards and other regulations intended to place the export

¹Report of the Commission to inquire into Co-operation and Agricultural Credit, (UG 16-34), Union Government, Cape Town, 1934, p. 28.

²Report of the National Marketing Council 1938-1946 (UG 27-47), Union Government, Cape Town, 1947, p. 49.

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trade on a sound basis already existed.³ Moderate amounts of corn were in fact exported.

The government, like those of many other countries at the time, also put considerable emphasis on promoting the ideal of co-operative marketing. As early as 1922 the Co-operative Societies Act⁴ provided a legal framework within which the co-operatives would operate.⁵ But farm groups were not satisfied and pressed strongly for a scheme of "compulsory co-operation". In 1925 such a provision was adopted as an amendment to the Act of 1922,⁶ but only tobacco farmers and wine farmers could muster sufficient majorities for such schemes to become operational.⁷

Encouraged by favourable overseas prices, a regular export surplus was produced during the late twenties, and the world price became the major influence determining domestic prices. When the world market collapsed in 1929/30 corn producers were in serious

³Official Year Book of the Union of South Africa No. 2, Government Printer, Pretoria, 1919, p.435.

⁴Act No. 28 of 1922.

⁵The Land and Agricultural Bank (established in 1912) was also permitted to extend credit to co-operatives - Report of the Commission to inquire into Co-operation and Agricultural Credit, p.10.

⁶Act No. 38 of 1925.

⁷Report of the Commission to inquire into Co-operation and Agricultural Credit, p. 15.

trouble. Grain merchants, some of whom lost heavily as a result of speculation, were no longer anxious to buy corn for export. Producers' prices dropped from 15 shillings and 2 pence per 200 lb. in 1926/27 to 10 shillings and 2 pence in 1929/30 and to 6 shillings $3\frac{1}{2}$ pence in 1932/33.⁸

It had been hoped that the co-operatives would be able to exert a strong influence on the market and save their members from bankruptcy. Such efforts were not well organized and ended in failure. The main reasons the co-operative movement did not develop into a strong, effective market force can be summarized as follows:

(1) Membership amounted to only about 30 per cent of producers.⁹ As a result of satisfactory prices up to 1928, and also because many of the earlier associations were established on a basis of "unlimited responsibility" by members, few of the big and efficient producers became members.

(2) Failure of members to conform to the contract also was an important factor.¹⁰ To evade repayment of credit advanced against the new crop, at least temporarily, members frequently sold

⁸Report of the Commission to inquire into Co-operation and Agricultural Credit, p.45.

⁹Ibid., p.26, as well as the Annual Report of the Corn Control Board 1939/40, p.4.

¹⁰Ibid, p.47.

all or a large proportion of that crop to outside buyers. This evasion was stimulated by the system of making advance payments at a flat rate, representing some fraction of the estimated average price that would be realized for the season. This meant that the ruling market price sometimes exceeded the advance payment by significant amounts. Members were tempted to cash in on that immediate and sure gain rather than to wait for an uncertain supplementary payment in the future.

(3) Although the co-operatives formed a central agency to handle the wholesale trade, this agency never established proper contacts in world markets.¹¹ It catered almost exclusively to local buyers, who operated in both the domestic and export markets.

When corn exporting became unprofitable to the grain merchants the central agency was left high and dry with virtually no means of negotiating in the world market.

(4) A lack of managerial ability and business experience among co-operative leaders proved to be a severe handicap, with respect to both internal organization and market policy.¹²

(5) Finally, all these, of course, were within a framework of world depression which put any export trading program in difficulty.

¹¹Report of the Commission to inquire into Co-operation and Agricultural Credit, p.46.

¹²Ibid, pp. 25 and 45.

In the face of mounting surpluses and extremely low prices the Government was virtually compelled to take action.

The Mealie (Maize) Control Act of 1931:¹³ This act represented the first step toward government control and market regulation. It provided for a two-price plan based upon compulsory export of a certain proportion of the total volume of corn marketed during the season. The scheme operated as follows:¹⁴

Any person (or firm) interested in the commercial buying of corn from producers was required by law to register as a trader. With due consideration to expected supply, domestic demand and the volume marketed, the Department of Agriculture determined what percentage of his purchases a trader would have to export. Each trader had to furnish the Department with full particulars about the transactions for each month. He also had to furnish official proof that the required quantity (quota) of his total purchases was exported. This proof consisted of certificates of export issued by the Harbour Authorities. These became known as quota-certificates. In this manner it was planned to create artificial scarcity in the domestic market.

The quota-certificates were negotiable and their value was determined by the difference between export parity prices (overseas price less cost of export) and local consumption prices. Since

¹³Act No. 39 of 1931.

¹⁴Report of the National Marketing Council 1938-1946, p.4.

both these prices, but particularly the former, were subject to fluctuation, a highly speculative market in quota-certificates developed. This tendency towards speculation was encouraged by the fact that a time lag of 3-4 months from the date of the purchase of corn stocks was originally allowed to traders before proof of export had to be submitted. The result was that certificates were frequently kept in circulation as long as possible before submitting them to the Department of Agriculture. Speculation in certificates was eventually curbed by the Department by reducing to only 2 months the time allowed before proof of export was due and by putting a fixed price on certificates and acting as a clearing house.

Under this Act the sponsors considered that the net world price would still remain the basis for all prices, but with domestic retail prices higher because of the required exports.

Very soon afterwards the government became convinced that the falling world price could not be permitted to pull down domestic prices to producers to the same extent. Their efforts to maintain producers' prices consisted of the following measures:

(1) The Land and Agricultural Bank was allowed to advance credit to co-operative societies beyond the previous limit of 60 per cent of ruling market prices, and the government added an additional guarantee varying from 1s. 6d. to 1s. 9d. on top of the advance payment determined by the Bank.¹⁵ It was argued that this

¹⁵Report of the National Marketing Council 1938-1946, p.50.

would provide some floor price to producers, and force traders to raise their bids accordingly.

(2) In December, 1931, the government agreed to subsidize the export of major agricultural products dependent upon export markets.¹⁶ An important reason was that England went off the gold standard and South Africa did not follow until January, 1933. At the time England was an important buyer of agricultural produce, including corn, and until the £SA was devalued the overseas demand for these commodities was affected in the same way as if prices were increased.

The 1931 scheme did not function too well for several reasons.¹⁷ Firstly, it was difficult to set the annual quota at just appropriate levels. Secondly, the time lags between date of purchase and date of actual export of the corresponding quota-quantity resulted in a large floating surplus early in the season. Thirdly, the wild speculation in the market for quota-certificates, as mentioned earlier, caused certificates to be retained by the trade for the maximum period of time; this made it difficult for the Department to keep an eye on the rate at which exports were taking place and further complicated the administration of the scheme.

¹⁶Annual Report of the Corn Control Board for 1939/40, Pretoria, p.11.

¹⁷Report of the National Marketing Council 1938-1946, p.50, and Report of the Commission to inquire into Co-operation and Agricultural Credit, p.36.



The Act of 1935: As a result of these experiences the Act of 1931 was amended in 1935, providing for the creation of the Mealie (Maize) Control Board.¹⁸ This Board was designed as an advisory body directly responsible to the Minister of Agriculture. Although it was representative of all interested groups, producers' spokesmen were in the majority - 8 members out of 15.

This experimental move can be regarded as a forerunner of the more direct and permanent measures which were embodied in the Marketing Act of 1937.¹⁹ Until then government measures were of a superficial nature. People continued to assume that the corn problems were temporary, and that with the end of the depression things would soon return to normal and the free market would again come into its own.

Views and attitudes were changing, however, and it became more apparent that sporadic government programs were not the answer to the problems of agriculture. More and more people came to believe that these problems were due to inherent weaknesses of the free market as it operated with respect to agriculture.²⁰

¹⁸Act No. 59 of 1935.

¹⁹Act No. 26 of 1937.

²⁰Report of the National Marketing Council 1943/44 (UG 31/1945, Pt. 1), p.9.

The Marketing Act of 1937 and subsequent Developments:

The preamble of the Act stated that it would provide, inter alia, for "the regulation of the production and sale of agricultural products, for the establishment of certain boards in connection therewith, for the grading and standardisation of agricultural products, ..."

The main approach was to establish separate boards of control for the main agricultural products. Each of these boards operated its own special program designed to achieve the central objectives of the Act in the most efficient manner. At the same time a National Marketing Council was created to supervise the functioning of the control boards and to co-ordinate their policies.²¹

The main objectives: The Marketing Act represented the first comprehensive legislation to deal with the major problems experienced by most branches of agriculture in South Africa. Although not explicitly stated in the Act, its fundamental objectives have been listed as: improving the productivity of the farming industry and increasing the efficiency of the allied marketing and processing trades for the general benefit of the producing and consuming community.²² The means by which these goals were to be achieved were:

²¹Sections 2-9 of the Act.

²²Report of the Marketing Act Commission (1947), UG No. 48 - 1949, Pretoria, 1949, p.10.

(1) An increased degree of price stability for agricultural products.

(2) A reduction in the margin between the prices to producers and consumers, which would promote increased marketing efficiency all around.²³

The Maize Control Board of 1935 became a statutory body. It had authority to regulate exports; to raise funds for paying export subsidies by assessing a levy on all purchases of corn from producers; to trade in corn and corn products for its own account with a view to influencing market prices; and to require of all persons trading in corn or corn products that they submit monthly returns to the Board covering all corn transactions.²⁴

Temporary Scheme: From 1938/39-1941/42 the Board continued the earlier efforts to remove surpluses from the domestic market. The method used changed slightly, namely, a "trader's levy" was collected on all purchases from producers to provide funds out of which export subsidies could be paid on all corn exported against permits of the Board. For example at the start of the 1938/39 season the Board announced a levy of one shilling per bag and an export subsidy of two shillings and three pence per bag.²⁵

²³Report of the Select Committee on the Subject of the Marketing Bill (D.C. 6-36), p.4.

²⁴Report of the National Marketing Council 1938-1946, p.51.

²⁵Ibid., p.51-52.

This arrangement was changed in 1939/40 when it was decided to split the levy between export subsidies and deferred payments made directly to producers.²⁶ The levy was still collected on all purchases from producers but the rate of the export subsidy was exactly equal to the levy. The total balance on the season's account of levies collected would then be distributed to producers. A sliding scale varying inversely with the quantities marketed by the producer was used - e.g. one shilling per bag on the first 500 bags, nine pence per bag on the second 500, etc. A small producer thus received a higher average payment per bag than big producers.

The Board also commenced small scale purchases in the market to support producers' prices. Purchases were confined to elevator certificates. All these measures were aimed at maintaining a higher domestic producers' price by forcing up domestic retail prices.²⁷

At this stage the whole complexion of the problem changed. Serious shortages began to develop and the Board was forced to fix first maximum traders' prices for corn and corn products²⁸ and soon

²⁶Annual Report of the Corn Control Board for 1939/40, pp.13 and 17.

²⁷Annual Report of the Corn Control Board for 1939/40, p.19.

²⁸Annual Report of the Corn Control Board for 1941/42.

after also the producers' price of corn.²⁹ By 1943/44, with the war still on, the Board decided to experiment with a limited one-channel marketing scheme in order to control the allocation of as large a proportion of the crop as possible.³⁰ The outcome of the experiment led to a full scale one-channel marketing scheme³¹ for 1944/45, and except for minor changes it has been in effect ever since.

Functioning of the one-channel marketing scheme:³² The Board as currently constituted consists of 6 representatives of producers who are members of co-operative societies, 6 representatives of producers who are not members of co-operative societies, 2 representatives of corn consumers, 2 representatives of corn traders, 1 representative of stock feeders, 2 representatives of corn millers, 1 representative of corn exporters and 1 representative of the Department of Agriculture. Thus producers' representatives are in the majority, namely 12 out of 21 members.

²⁹Annual Report of the Corn Control Board for 1942/43.

³⁰Annual Report of the Corn Control Board for 1943/44.

³¹It is called a one-channel marketing scheme because the Board is the sole purchaser of all corn marketed in the main producing areas, and the sole distributor of all corn so purchased.

³²The current corn control scheme was published by Proclamation No. 64 of 1957, Government Printer, Pretoria, 1957.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is crucial for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for a systematic approach to data collection and the importance of using reliable sources of information.

3. The third part of the document focuses on the analysis of the collected data. It discusses the various techniques used to identify trends, patterns, and anomalies in the data, and how these insights can be used to inform decision-making.

4. The fourth part of the document discusses the importance of communication and reporting. It emphasizes that the results of the data analysis should be clearly and concisely communicated to the relevant stakeholders, and that regular reports should be provided to keep them informed of the organization's performance.

5. The fifth part of the document discusses the importance of continuous improvement. It emphasizes that the organization should regularly review its processes and procedures to identify areas for improvement and implement changes to enhance its performance.

6. The sixth part of the document discusses the importance of ethical considerations. It emphasizes that the organization should adhere to high standards of ethical conduct in all its activities, and that it should be transparent about its data collection and analysis practices.

7. The seventh part of the document discusses the importance of security. It emphasizes that the organization should take appropriate measures to protect its data and information from unauthorized access, disclosure, or loss.

8. The eighth part of the document discusses the importance of compliance. It emphasizes that the organization should ensure that its activities comply with all applicable laws, regulations, and standards.

9. The ninth part of the document discusses the importance of innovation. It emphasizes that the organization should encourage its employees to think creatively and develop new ideas and solutions to improve its performance.

10. The tenth part of the document discusses the importance of collaboration. It emphasizes that the organization should foster a culture of collaboration and teamwork, and that it should encourage its employees to work together to achieve common goals.

a. Main objectives: The main objectives of the scheme are those already listed as the central objectives of the Marketing Act. The Board's responsibilities to promote these objectives include the following major tasks:

(1) To maintain fair and just price levels for all groups affected by its policies.

(2) To establish and enforce an effective system of quality standards and grading regulations and thus to promote efficient and equitable prices.

(3) To ensure an orderly and effective storage and distribution system.

(4) To provide the industry with sound leadership, particularly through co-operation with the Department of Agriculture in research and extension projects that have special application to the corn industry.

b. Powers of the Board: The Board was granted far-reaching powers to administer the program. The most important of these are the following:³³

(1) The right to act as the sole buyer and seller of corn.

(2) The power to appoint trader agents and to register corn millers.

³³Section 22 of the Scheme.

(3) With the approval of the Minister of Agriculture, to fix the prices of corn and corn products.

(4) To utilize its funds for any object which in its opinion is likely to encourage the internal consumption of corn or corn products and assist the development and betterment of the corn industry.

(5) To assist by grant or loan or otherwise, any research work relating to the improvement, production processing or marketing of corn and corn products.

(6) To advise the Minister of Agriculture on all matters relating to the marketing or processing of corn and corn products with respect to the domestic as well as the overseas market.

c. Practical operation of the scheme: In practice the scheme functions as follows:³⁴

At the beginning of the season the Board determines, with the approval of the Minister of Agriculture, the producers' price for corn. With this price as a base, the maximum selling prices for corn and corn products in the wholesale and retail trades are then determined.

The Board itself does not undertake the physical handling of corn, but appoints agents to perform the task of receiving, storing and dispatching such stocks of corn as producers offer for sale. In return, the agents receive handling and storage remuneration.

³⁴Annual Reports of the Corn Control Board for 1956/57, 1957/58 and 1958/59.

1. The first part of the document is a list of names and titles, including the names of the authors and their respective institutions. This list is organized in a table format with columns for names and titles.

2. The second part of the document contains the titles of the papers or sections, arranged in a list. These titles are often followed by the names of the authors.

3. The third part of the document consists of the main body of text, which includes the abstracts and the beginning of the articles. This section is divided into several columns, likely representing different papers or sections.

4. The fourth part of the document contains the names of the authors and their affiliations, arranged in a list. This information is typically placed at the end of each paper or section.

5. The fifth part of the document is a list of names and titles, similar to the first part, but it may represent a different set of authors or a different section of the document.

6. The sixth part of the document contains the titles of the papers or sections, arranged in a list. These titles are often followed by the names of the authors.

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9. The ninth part of the document is a list of names and titles, similar to the first part, but it may represent a different set of authors or a different section of the document.

10. The tenth part of the document contains the titles of the papers or sections, arranged in a list. These titles are often followed by the names of the authors.

11. The eleventh part of the document consists of the main body of text, which includes the abstracts and the beginning of the articles. This section is divided into several columns, likely representing different papers or sections.

12. The twelfth part of the document contains the names of the authors and their affiliations, arranged in a list. This information is typically placed at the end of each paper or section.

ration at predetermined rates. These payments are met out of the Board's margin which is added to the producers' price. The Board is also the final purchaser of all elevator receipts issued against grain deposited with the South African Railways and Harbours Authorities.

For purposes of the scheme South Africa was divided into two main areas. Area A comprises the provinces of Transvaal and Orange Free State plus the districts of Mafeking and Vryburg in the Cape Province. About 90 per cent of the total crop is produced in Area A, where the Board, through its agents, exercises complete control over the quantity marketed by producers.

In Area B, the rest of South Africa, production is relatively unimportant and complete control not necessary. Traders in this area who desire to purchase corn from producers have to register with the Board, but are permitted to buy and sell corn freely - subject only to the price regulations and any rationing schemes that may be in effect. Since 1954/55 the condition that traders have to register with the Board has been suspended with respect to certain districts of the Ciskei and the Transkei in the Cape Province.

As indicated above, the Board has control over all the corn marketed by producers in Area A. In selling on the local market the Board allows quantity discounts, in that for each grade of corn a sliding scale of prices applies, depending upon the quantity ordered. To make distribution more flexible agents are permitted to fill local orders for 50 bags or less directly, but large orders

by grain millers and distributors have to be placed with the Board. The Board then allocates such orders, within practical limits, to agents most favourably located to supply these buyers. In the producing areas the Board follows a policy of reserving local corn for local mills as far as possible. Millers in short-crop areas and in the consuming areas, however, have to accept the Board's ruling on points of supply and therefore can exercise only limited control over inward railage costs.

The Board does not interfere with the retail trade, except for fixing maximum prices and for prescribing and enforcing quality standards and grading regulations.

The magnitude of the task which the Board performed in the marketing of corn during the past three seasons can be clearly observed from the details contained in Table 35.

Table 35. A summary record of the Board's activities in the marketing of the corn crop during the marketing seasons 1956/57-1958/59.

Marketing season	Number of receiving points (all agents)	Total quantity marketed in Area A	Sales by Board for local consumption	Sales by Board for export	Carry-over at end of season
'000 bags					
1956/57	704	32,372	21,750	11,200	11,505
1957/58	675	36,460	20,698	15,702	11,565
1958/59	674	29,053	24,581	11,743	4,294

Sources: Annual Reports of the Corn Control Board for 1956/57, 1957/58 and 1958/59.

• The first part of the document discusses the importance of maintaining accurate records of all transactions and activities related to the business.

• It also highlights the need for regular audits and reviews to ensure compliance with applicable laws and regulations.

• The document further outlines the various methods and techniques used to collect and analyze data, including interviews, surveys, and focus groups.

• Additionally, it provides a detailed overview of the data analysis process, from data cleaning and preprocessing to the final interpretation of results.

• The document also discusses the importance of data security and privacy, and provides recommendations for implementing robust security measures.

• Finally, it concludes by emphasizing the value of data-driven insights in making informed business decisions and improving overall performance.

• The document is intended to serve as a comprehensive guide for anyone involved in data collection and analysis, providing both theoretical background and practical advice.

• It is structured into several sections, each focusing on a specific aspect of the data analysis process, from data collection to final reporting.

• The document is written in a clear and concise style, making it accessible to both experienced professionals and newcomers to the field.

• It includes numerous examples and case studies to illustrate key concepts and techniques, providing a practical understanding of the data analysis process.

• The document is a valuable resource for anyone looking to improve their data analysis skills and gain deeper insights into their business operations.

• It is highly recommended for anyone involved in data collection and analysis, as it provides a comprehensive overview of the entire process and offers practical advice for each step.

A comparison of the quantities of corn purchased from producers by the various types of agents in 1944/45, the first year in which the one-channel scheme was in operation, and in 1958/59, the most recent year for which the figures are available, reveals the important role of the co-operatives (Table 36). Their share of the increased quantity marketed by producers has increased to a point where they completely dominate the scene. This is largely due to the important place they already occupied in the corn market in

Table 36. Quantities of corn purchased from producers on behalf of the Corn Control Board by each type of agent during the marketing seasons 1944/45 and 1958/59.

Type of agent	1944/45		1958/59	
	Number of bags ('000)	Percentage of total	Number of bags ('000)	Percentage of total
Co-operatives	7,418	64.4	23,443	80.8
Miller agents	1,167	10.1	3,738	12.9
Trader agents	2,276	19.8	1,436	4.9
Elevators	659	5.7	410	1.4
Total	11,520 [‡]	100.0	29,027 [‡]	100.0

[‡]Does not include small quantities purchased directly by the Board.

Sources: Annual Reports of the Corn Control Board for 1944/45 and 1958/59.

The first part of the document discusses the importance of maintaining accurate records of all transactions. This includes not only sales and purchases but also any other financial activities that may occur. It is essential to ensure that all entries are properly documented and supported by appropriate evidence.

In addition, the document emphasizes the need for regular reconciliation of accounts. This process involves comparing the company's internal records with external statements, such as bank statements, to identify any discrepancies. Regular reconciliation helps to prevent errors and ensures that the financial data is up-to-date and accurate.

Furthermore, the document highlights the significance of maintaining a clear and organized system for storing financial records. This can be achieved through the use of a robust accounting software system that allows for easy access and retrieval of information. It is also important to implement proper security measures to protect sensitive financial data from unauthorized access.

The second part of the document focuses on the importance of maintaining accurate records of all transactions.

This section discusses the various methods used to collect and analyze data.

The first method involves the use of surveys and questionnaires to gather information from a large number of respondents.

- This method is particularly useful for gathering quantitative data that can be easily analyzed statistically.
- It allows researchers to reach a wide range of participants and collect data over a long period of time.
- However, surveys may be subject to response bias and may not capture the depth of individual experiences.
- Another method is the use of focus groups, which involve bringing a small group of people together to discuss a specific topic.
- This method is useful for gathering qualitative data and for exploring the reasons behind certain behaviors or attitudes.
- Focus groups can provide valuable insights into the complexities of human behavior and the social context in which it occurs.
- Finally, the use of interviews is another common method for data collection. Interviews can be structured or unstructured, depending on the research objectives.
- They allow researchers to explore individual perspectives and experiences in greater detail than surveys or focus groups.

The third part of the document discusses the importance of maintaining accurate records of all transactions.

This section discusses the various methods used to collect and analyze data.

1944/45, but their ability to expand in later years was increased considerably since the Board permitted co-operatives to open new receiving depots whenever it became necessary, while a rather strict policy was followed in connection with private firms.

In the present study the main interest is centred upon the Board's policy regarding producers' prices in particular, and its efforts to ensure a maximum degree of stability for the corn industry. The rest of the chapter therefore, will be devoted to a description of the Board's method of fixing prices for producers, its export policies, and a critical evaluation.

Procedures used by the Board:

The method used in estimating corn prices:³⁵ The producers' price for corn is the base for all other prices: margins to cover administration costs, storage and handling, processing and distribution are added to the price fixed for the best grade(s). The prices for the other grades are then determined with the usual spreads. To a great extent the success or failure of the pricing system thus depends upon the degree to which the fixed price reflects the actual market conditions and underlying relationships.

The procedures for fixing producer prices are the following:

(1) The Division of Crops and Markets (Department of Agriculture) prepares an estimate of the production costs for corn,

³⁵Annual Reports of the Board for 1956/57-1958/59.

inclusive of interest on land and capital and net of any credits for value of stover, etc.

Estimates are based on per morgen costs and then divided by the expected yield to obtain cost per bag harvested.

(2) To this estimate is then added the cost of a bag and twine,³⁶ and the Control Board's estimate of a "reasonable remuneration" to the producer for his services as entrepreneur and manager.

In some years a small margin for contingencies is added, while a special incentive of varying amount was included in the final price for the marketing years 1951/52-1955/56.³⁷

(3) The amount thus arrived at is the gross price to producers. Since producers have to contribute to the Corn Stabilization Fund the net price to the producer would be the gross price less the Stabilization Fund levy (see also the related discussion under "Export Policies of the Board").

It should be pointed out that apart from the direct representation of farm groups on the Control Board, producers' views on the proposed price for each year are also presented to the Board by the National Maize Committee of the South African Agricultural Union.³⁸ The price finally recommended to the Minister of

³⁶It is only a small percentage of the total crop that is delivered in bulk - such deliveries are subject to an adjusted price.

³⁷Refer to the respective Annual Reports of the Corn Control Board.

³⁸The most important national organization of farmers.

Agriculture for his approval, can be regarded as representative of the whole industry's views. In his decision whether to accept the Board's proposed price for producers, the Minister is aided by the recommendations from the National Marketing Council. Representatives of the Council participate in the deliberations which precede the Board's recommendation of a price to the Minister.

The producers' prices of corn for the marketing seasons 1949/50-1958/59 are given in Table 37.

The method of estimating costs of production:³⁹ The Division of Economics and Markets from time to time undertakes complete cost surveys in three of the major corn producing areas. The three areas, Transvaal Highveld, Western Transvaal and North Western Free State are taken as representative of the major corn producing areas, and the farms in the respective samples as representative of farms where corn is the major enterprise. In the interim years supplementary surveys are made regarding specific items. The values for individual items are annually adjusted for changes in

³⁹Metode van Berekening van Mielieproduksiekoste.

Table 37. Producers' prices for best grades of corn as fixed by the Corn Control Board for the marketing seasons 1949/50-1958/59.

Season	Basic cost of production	Cost of bag and twine	Margin for contingencies	Managerial remuneration and entrepreneur's profit	Special incentive	Gross producers' price
	shillings and pence per bag					
1949/50	13/1½	2/3	-	5/10½	-	21/3
1950/51	12/11	2/3	-/9 [*]	8/1	-	24/-
1951/52	14/5½	2/3	1/- [*]	8/5	-/4½	26/6
1952/53	16/8½	2/3	1/- [*]	8/9½	1/3	30/-
1953/54	18/9¾	2/3	-/6	8/9½	1/7¾	32/-
1954/55	18/2	2/3	-/3	8/9½	1/6½	31/-
1955/56	18/1	2/3½	-/4	8/9½	-/9	30/3
1956/57	18/5½	2/3½	-/1	9/2	-	30/-
1957/58	18/6½	2/2½	-/1	9/2	-	30/-
1958/59	18/0½	2/2½	-/1	9/2	-	29/6

^{*}Includes provision for interest on working capital at 6% per annum. Since 1953/54 this item is included in the basic cost.

Source: Annual Report of the Board for 1958/59, Annexure IX, p.35.

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their respective price indexes (Table 38).

Table 38. Representative areas and details about cost of production surveys.

Area	Crop year for which complete survey was made	Crop year for which supplementary survey was made
Transvaal Highveld	1945/46-1947/48; 1950/51, 1951/52, 1954/55, 1955/56.	1948/49; 1949/50; 1952/53, 1953/54; 1956/57-1959/60.
North Western Free State	1945/46-1949/50; 1952/53, 1953/54.	1950/51; 1951/52; 1954/55 - 1959/60.
Western Transvaal	1948/49; 1949/50; 1953/54; 1954/55.	1950/51-1952/53. 1955/56 - 1959/60.

Sources: (1) Die Produksiekoste van Mielies, Pamphlet No. 313, Department of Agriculture, Pretoria, 1950.

(2) Metode van Berekening van Mielieproduksiekoste.

a. Sampling procedures: The samples consist of approximately 100 farmers in each area. The samples are stratified with a view to obtain a proper geographical distribution in the sample and to procure enough observations on farms in each size-group. Whether the farm is owned or operated by an efficient or inefficient farmer, a rich or poor farmer, is not taken into consideration.

Since complete surveys are usually undertaken in two consecutive years, the various farms remain in the sample for the duration of the period if circumstances permit. This provides for continuity in the particular series, but a new sample is selected for each series of surveys.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is crucial for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for consistent and reliable data collection processes to support informed decision-making.

3. The third part of the document focuses on the role of technology in data management and analysis. It discusses how modern software solutions can streamline data collection, storage, and reporting, thereby improving efficiency and accuracy.

4. The fourth part of the document addresses the challenges associated with data management, such as data quality, security, and privacy. It provides strategies to mitigate these risks and ensure that data is used responsibly and ethically.

5. The fifth part of the document concludes by summarizing the key findings and recommendations. It stresses the importance of ongoing monitoring and evaluation to ensure that data management practices remain effective and aligned with the organization's goals.

6. The sixth part of the document provides a detailed overview of the data collection process, including the identification of data sources, the design of data collection instruments, and the implementation of data collection procedures.

7. The seventh part of the document discusses the various methods used for data analysis, such as descriptive statistics, inferential statistics, and qualitative analysis. It explains how these methods are used to interpret the data and draw meaningful conclusions.

8. The eighth part of the document focuses on the presentation of data, including the use of tables, charts, and graphs. It provides guidelines for creating clear and concise reports that effectively communicate the results of the data analysis.

9. The ninth part of the document discusses the importance of data security and privacy. It outlines the measures that should be taken to protect sensitive data from unauthorized access, loss, or disclosure.

10. The tenth part of the document provides a final summary and concludes the report. It reiterates the key findings and emphasizes the need for continued attention to data management practices to ensure the organization's long-term success.

b. Averaging and weighting in computing costs: The actual values for each of the various items are combined for each region and expressed as averages per morgen planted. The sum total of per morgen costs for each area is then divided by the relevant estimated yield to obtain the basic cost of production per bag.

The area-averages are then weighted to obtain the average for the country. The respective weights for each area were revised at the beginning of the 1957/58 marketing season,⁴⁰ and are now as follows:

	<u>Proportions assigned until 1956/57</u>	<u>Proportions assigned from 1957/58</u>
Transvaal Highveld	.30	.275
North Western Free State	.40	.450
Western Transvaal	<u>.30</u>	<u>.275</u>
	<u>1.00</u>	<u>1.000</u>

In earlier years the estimated yield per morgen used for each area was selected somewhat arbitrarily. Since the 1954/55 marketing season, however, a five year moving average of sample yields is used.

Export policies of the Board:⁴¹ As shown in Chapter II, South Africa experienced a shortage of corn at the inception of the

⁴⁰ Annual Report of the Corn Control Board for 1956/57, p.9.

⁴¹ Annual Reports of the Corn Control Board for the marketing years 1953/54-1958/59.

one-channel marketing scheme and actually imported significant quantities during the period 1945-1947. Since regular surpluses appeared in the domestic market from 1947/48 onwards, and world corn prices were relatively favourable, it was decided to permit the export of some of the surplus supplies. The position has since changed to one where exports have become a necessity because of the size of the regular surpluses.

Due mainly to shipping costs there exist important differences between the gross world price and the domestic price for corn. This factor has two effects upon the sales policy of the Board:

(1) Estimates of the exportable surpluses have to be rather conservative, because if domestic shortages develop as a result of over-exportation with the result that corn has to be imported at considerable cost, the Board would be open to serious criticism.

In the earlier postwar years, when surpluses were moderate, it was frequently necessary to wait until just before the new crop was harvested before a surplus could be declared. This increased storage costs on the quantities eventually exported, but it could not be avoided.

(2) Corn and corn products can only be exported against export permits issued on approval of the Board. These permits are linked with the sale of export rights by the Board. Thus it is in

a position to ensure that only corn purchased at export prices will be exported, and in that way it can also collect a share of any profit afforded by favourable foreign prices.

The Board does not export corn for its own account. Bids are invited from local exporters for full shiploads, but the Board is not compelled to accept the highest bid. At other times a direct offer, on the initiative of a buyer, is also given consideration. Contracts are offered on the following bases:⁴²

free alongside elevator, in bulk; or
 free alongside ship, in bags; or
 free on board, in bags.

As previously indicated, sales by the Board for export purposes during 1947/48-1951/52 yielded sizeable net profits, but since 1953/54 the picture has changed completely. Big losses were incurred in recent years as a result of the high volume of surpluses that the Board was forced to sell for export during times of generally low world prices.

A certain proportion of the export profits were redistributed to producers on the basis of their pro rata shares in the total quantity marketed during the years profits were realized - e.g. supplementary payments of 9 pence per bag marketed were made in 1948/49 and 1949/50, while payments of one shilling per bag and two

⁴²The Board does not sell on a c.i.f. basis because it would involve setting up special services which were unwarranted by the temporary (sic) nature of the current situation - refer to the Annual Report of the Board for 1955/56, p.27.

shillings per bag were made in 1950/51 and 1951/52 respectively. A further proportion was assigned to special projects designed to benefit the industry in indirect ways, such as the hybrid seed corn program, the bulk storage scheme, and other research projects. The balance was retained as an accumulated surplus on Export Account.

Apart from the fact that world prices were generally lower in recent years, the following factors have had a limiting effect upon South Africa's position in the world market:

(1) Corn yields per unit of land in South Africa are low relative to those in the other exporting countries - e.g. the average yield in South Africa in 1956/57 was 9.1 cwt. per acre, that in the United States 23.6 cwt. and in Argentina 11.0 cwt. per acre (the latter being almost 3 cwt. below normal average yield).⁴³

(2) Corn used domestically in human consumption is almost exclusively of the white varieties; as a result it is commonly produced, and the surpluses, until recently, mainly consisted of this type. The world market for white corn (which is used for food and industrial purposes), is much more limited than that for yellow corn, which is used mainly as feed.

(3) Important increases in railage and freight charges produced a real cost-squeeze during 1954 and 1955, while the rising trend in producers' prices up to 1953/54 also had an unfavourable effect.

⁴³Grain Crops, 1959, p.67.

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(4) Such large quantities had to be exported that the railways could not cope with the volume of traffic. During 1954/55, particularly, it proved a definite handicap. However, the situation has improved since then.

An important problem is how to distribute the financial burden caused by the losses on exports. In 1954 it became evident that future exports might bring financial losses and the Board, with the approval of the Minister of Agriculture, established a Corn Stabilization Fund. The accumulated surplus on Export Account, as on 30th April, 1954, was used to start the Fund. Since further contributions became necessary, corn producers and consumers, as well as the Government, have contributed to the Fund. The rates of contribution by the parties concerned are given in Table 39.

It should be pointed out that no firm rule or formula exists for determining the respective rates at which the parties have to contribute to the Fund. It is an entirely arbitrary decision which is taken each year.

The producers' contributions to the Fund are collected through the Board's agents in the form of a levy. This can be regarded as the penalty for over-producing or, alternatively, as a disincentive to production. The consumers' contribution is added on to the Board's sales price in the domestic market, while the Government's contribution is recovered along with the consumers' subsidy from the Treasury.

Table 39. Rates of contribution to the Corn Stabilization Fund.

Marketing season	The Government ⁽¹⁾	Producers ⁽²⁾	Consumers ⁽³⁾	
	On both white and yellow corn	On both white and yellow corn	On white corn	On yellow corn
	Pence per bag.			
1954/55	6	-	-	-
1955/56	4½	3	-	-
1956/57	4½	6	6	6
1957/58	4½	15	6	-
1958/59	4½	15	12	6

(1) and (3) On all corn of the specified colour sold by the Board for local consumption.

(2) On all corn marketed by producers.

Source: Annual Reports of the Corn Control Board for the seasons involved.

Since its introduction up to 30th April, 1959, the Fund has been built up and utilized as follows:⁴⁴

Unappropriated export profits	£ 3,524,000
Contributions by producers	5,416,000
Contributions by consumers	1,808,000
Contributions by the Government	2,198,000
Interest, etc.	1,260,000
	<hr/>
	£14,206,000
Export losses	8,215,000
	<hr/>
Credit balance 30th April, 1959	£ 7,620,000
	<hr/>

On account of the many relevant variables which cannot be predicted with accuracy such as the actual volume of exports, the average loss per bag, the quantity marketed by producers and the quantity sold by the Board for domestic consumption, it is to be expected that the Board would be inclined to budget conservatively. As a result the Fund has grown steadily each year.

The above figures indicate that the direct contributions by producers exceeded the combined contributions by consumers and the government by £1.4 million, or more than one-third. If it is further-
more considered that the unappropriated profits on exports which were paid into the Fund morally belonged to the producers, there can be little doubt that the burden of export losses has thus far been shouldered by the party chiefly responsible for it, namely, the producers.

⁴⁴Annual Report of the Corn Control Board for 1958/59 - Annexure XIII, p.42.

Critical Analysis and Evaluation of the Programs to Date:

The fundamental objectives of the Marketing Act of 1937 as listed earlier were: to improve the productivity of the farming industry and to increase the efficiency of the allied marketing and processing trades. These goals were to be achieved by means of an increased degree of price stability for agricultural products and a reduction in the marketing margins. The discussion of the Corn Control Board's programs to promote these goals was limited chiefly to its price policies and its efforts to remove growing surpluses from the domestic market.

It is evident that under the kind of program in operation in South Africa, tremendous importance is attached to the price fixed for producers. Unless this price approximates with reasonable accuracy the equilibrium medium and long-run prices that would rule in the market for corn, this could lead to an imbalance in resource allocation within agriculture in spite of the merits of stable prices and orderly marketing.

In this section a critical analysis of the method used to estimate producers' prices will be presented, followed by an evaluation of the results achieved by the Board up to 1959.

Analysis of the Procedures used in estimating producers' prices:

There were two main reasons why cost of production was selected as the basis for fixing producers' prices in South Africa:⁴⁵

⁴⁵Report of the National Marketing Council, 1938-1946, p.55.

(1) When prices were fixed for the first time in 1942/43 relative shortages of supply existed under the generally inflationary conditions of World War II. In the absence of a "normal" price, cost of production was regarded as the best yardstick by which to set prices.

(2) Farmers felt that such a price would provide protection against the hardships of a depression such as they experienced during the thirties. They were willing to sacrifice the immediate inflationary gains for long-run security.

The main objections generally advanced against using cost of production in determining prices are:

(1) In the short run supply is fixed, and price is determined by its relation to demand, not by the cost of production.

(2) Even though cost of production might be useful, it is difficult and expensive to obtain reliable estimates of the various factors involved.

(3) There are serious difficulties in allocating overhead costs on those farms which have several enterprises.

(4) For the long run there is also the problem of land values. Favourable prices would tend to bid up land prices, which would then become part of future costs of production.

(5) Another component of the producers' price which presents many difficulties is the estimate for managerial remuneration and entrepreneur's profit. This involves welfare considerations

that are difficult to express quantitatively in a way that would be both equitable and politically acceptable.

The principle of using cost of production for purposes of price fixation will be further discussed in Chapter VI. Suffice it to state at this stage that certain objections can be raised against the method as currently applied in South Africa:

a. The sample should consist only of efficient producers: The sample selected for purposes of cost surveys should not include inefficient farms. "Alleen die offers die een nuttige bydrage tot het product hebben geleverd, kunnen een constituerend bestanddeel van die kostprijs uitmaken."⁴⁶ Unless a proper balance between the various factors of production is maintained a certain degree of waste would be included in the quantities of those factors used up in the production process. And waste does not constitute part of the cost of production.

It has already been mentioned that in the selection of the sample at present no attention is paid to the degree of efficiency reflected in farm organization and management. Thus it is not a true cost estimate which is finally arrived at; neither is it known what the possible weight of inefficient farms in the sample actually may be and therefore no correction can be made for this error. In re-

⁴⁶Translated as: Only those offers which made a useful contribution to the product form part of the true costs of production - Van der Schroeff, H.J., De Leer van de Kostprijs, (N.V. Uitgeversmaatschappij, Amsterdam-Antwerpen, 3rd impression 1952/53), pp.24-26.

cent years it has been stressed by the Board that the cost of production estimates are being used mainly with a view to gauge year-to-year changes in costs, rather than to determine the actual level of costs. In this respect too a sample consisting only of efficient producers would give better results, since it would reflect more accurately the "unavoidable" increases in costs as well as the effects of new technology, et cetera.

b. The unreliability of present estimated average yields: The average yield used in computing the cost per bag is a crucial factor, yet it seems that the estimates used by the Division in recent years have been rather poor approximations of the actual yield obtained in the representative areas - refer Charts Nos. 2-4.

There appears to be a definite trend factor present over the past 10 years, and unless the moving average is adjusted for trend it will tend to be somewhat below the actual average. In this respect a three-year average will be less affected than a five-year average.

Even when the actual yields for each area are weighted and combined into a single average, and then compared with a similar combined average of the respective moving averages, the latter remains below the actual yield - refer to Chart No. 5.⁴⁷

⁴⁷Weights are those for computing cost per bag.

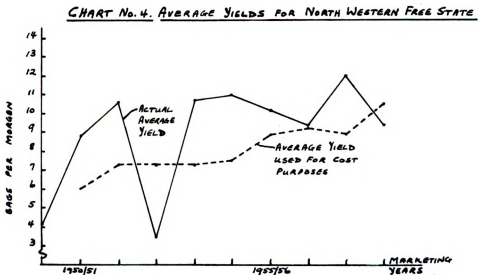
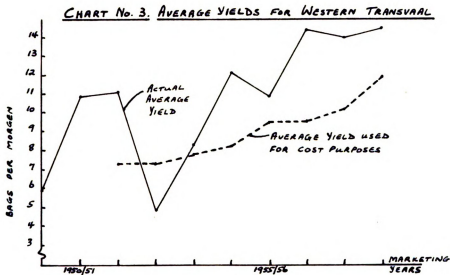
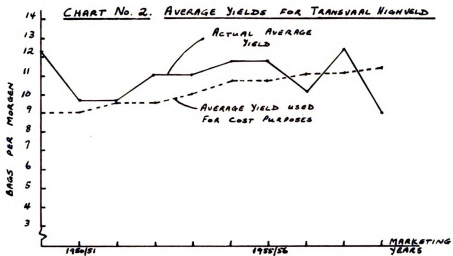
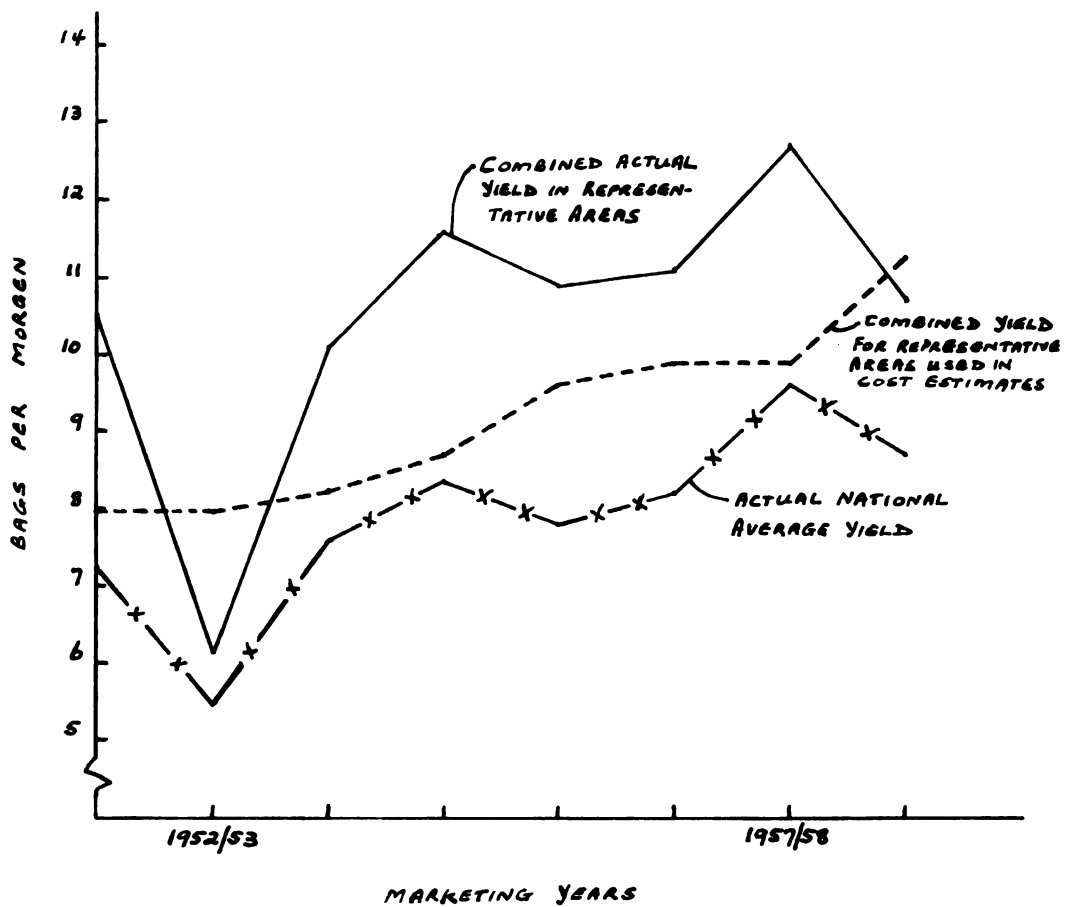


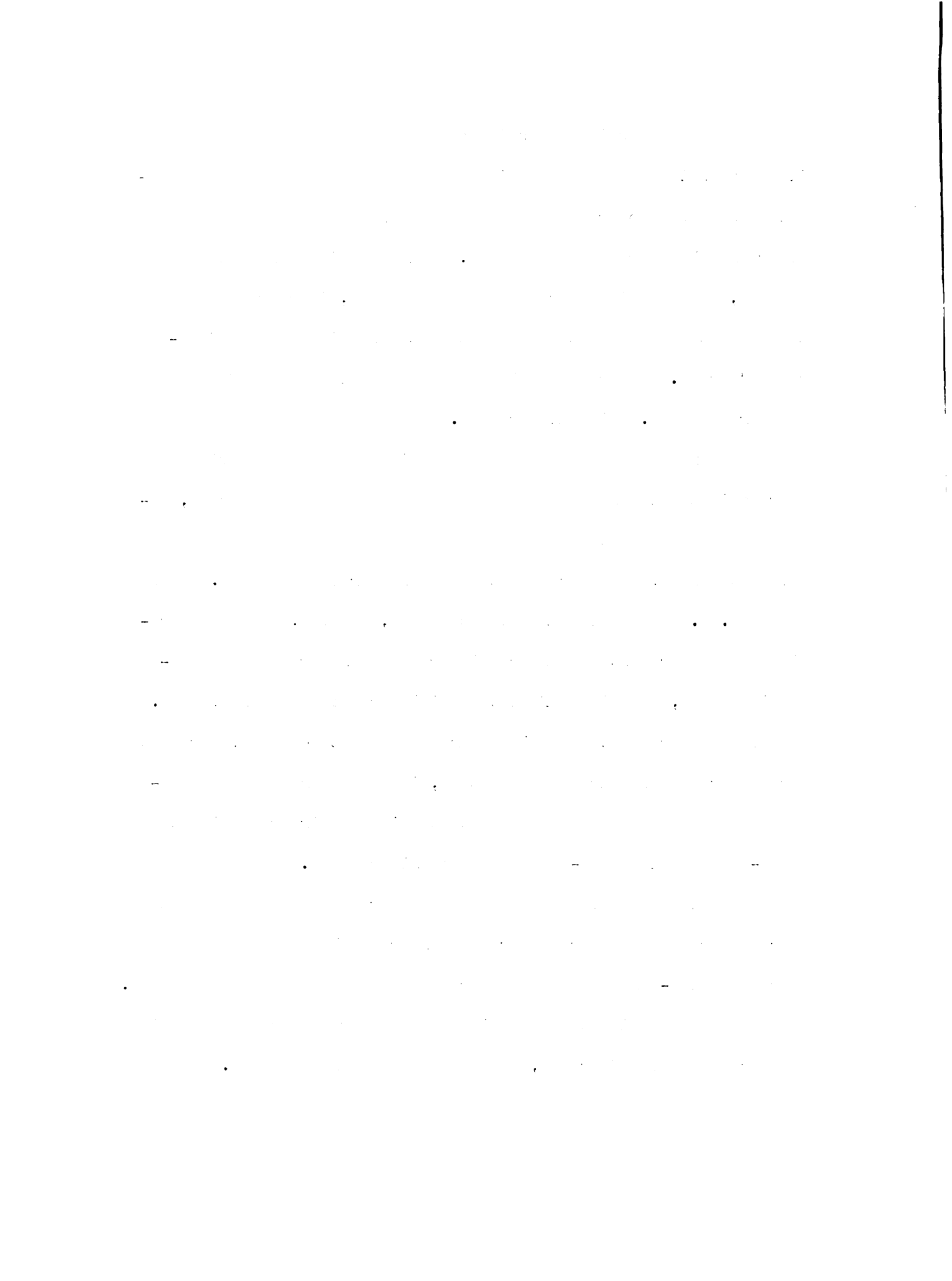
CHART No. 5. TOTAL AVERAGE YIELDS



This bias in the estimated yield should be emphasized for it means that in four out of five years the cost has been overestimated because a lower yield than the actual yield has been used to determine the average cost per bag. In Appendix Table 5 the effect thereof, for the five years 1950/51 to 1954/55, is represented by the percentage difference between the actual price and the "corrected" price. It resulted in raising the total value of the crop on average by £3.6 million per year.

One might argue that it is desirable that the moving average is constantly below the actual weighted sample average, because the national actual average has been still below the weighted moving sample average throughout the whole period mentioned. See Chart No. 5. This view is not acceptable, however, because approximately 20 per cent of the crop is produced on marginal and sub-marginal land, the yield of which must lower the national average. If one considers that the prices during the past years have brought forth a tremendous surplus production, it would hardly seem appropriate to encourage these farmers to continue their production of corn - neglecting short-run welfare considerations.

It should be noted that the pattern of the weighted actual average for the three areas very closely resembles the national average yield - although the latter is consistently below the former. This seems to justify the selection of these areas for field studies as representative of trends, if not of the level of yields.



c. The destabilizing effect on farm income: A stable price for corn while total production fluctuates has a destabilizing influence on farm incomes.

High yields usually reflect good growing conditions. During the 1945/46-1954/55 period average yield and area planted moved in opposite directions only once - from 1949/50-1950/51. With stable prices this implies high incomes in years of large crops and low incomes in years of small crops. Although this need not be true for all farms it must hold for the majority of farms since high average yields indicate that more farms had good yields relative to years of low average yields.

The estimate for managerial remuneration and entrepreneur's profit may be of key importance in this respect. At present a certain sum representing this item is added to the estimate of the basic cost of production per bag. How this sum is arrived at is not disclosed,⁴⁸ which would indicate that it must be rather arbitrary. There is no information available on what the allowance for management is and what the allowance is for entrepreneur's profit, though this would seem a fundamental need.

The allowance for this item in the producers' price has been changed only once since the 1952/53 marketing season (Table 37). If fluctuating yield (due to inconsistent weather) is the main factor influencing output and thus income, then it is not advisable to deter-

⁴⁸For the marketing seasons 1948/49-1951/52 a specific formula was used by the Board to determine this figure. In 1952/53 the Board decided to do away with the formula (refer to the Annual Report of the Corn Control Board 1952/53 p.10).

mine the entrepreneur's share in such a way that it is fixed per bag irrespective of yield per unit of land. Rather it should be determined on a per morgen cultivated basis, so that its per bag value would vary inversely with estimated yield. In this way the price would be better adjusted to changes in supply conditions.

In view of the increased mechanization which has been described earlier, the annual cash outlay of farmers must have increased substantially - (Appendix Table 2 confirms this in respect of fertilizer costs). Farmers, therefore, have increasing needs for cash incomes which exceed mere living expenses. Wide fluctuations in the total crop are regular features of production in most corn regions, and stable prices therefore have a destabilizing effect on farm incomes which could become a serious drawback. The present method, aimed at stabilizing income over a five-year cycle, may not provide sufficient security from year to year anymore.

General efforts to increase productivity: An evaluation of the Board's achievements would not be complete without reference to its efforts in the non-price area. A proportion of the export profits realized before 1954, was assigned to special projects designed to benefit the industry in indirect ways. Several of these projects deserve mention:

(1) A program to speed up research on hybrid corn varieties that would be especially adapted to conditions in South Africa was

sponsored by the Board.⁴⁹ The Department of Agriculture started such a program in 1925 but progress was slow. In 1947 the Board decided to provide financial assistance to the Department for this project, and very good results have been obtained. To encourage private enterprise to enter this field of activity, interested seed merchants and co-operative societies since 1953 have been registered with the Board to produce commercial hybrid seed under the Board's supervision. This has been an important factor responsible for the increase in the quantities of hybrid seed corn distributed to farmers in recent years.

(2) It was also decided to co-operate with the Department of Agriculture in a project to establish and develop experimental farms in various parts of the commercial corn areas - this project is known as the Pilot Research Farm Scheme.⁵⁰ The units were planned as regular operating farms, so as to study the difficulties encountered by farmers in each region and to develop the best enterprise-combinations and crop-rotation systems for each region.

Progress was slow and the program expensive, but it may still turn out to be a worthwhile experiment.

⁴⁹Annual Reports of the Corn Control Board for 1950/51 (pp. 16-17), for 1953/54 (p.24) and subsequent years.

⁵⁰Annual Report of the Corn Control Board for 1950/51 (pp.17-18) and subsequent years.

(3) In 1951 the Board agreed to contribute £60,000 during the following five years to a scholarship program of the Department of Agriculture aimed at providing the Department with more trained personnel. The program was well received and a further amount of £60,000 was voted for this purpose in 1955.⁵¹

It is almost impossible to separate the contributions of the various projects but indications are that the overall effects have been favourable.

Evaluation: Three aspects of the Board's operation will receive consideration: (a) the price policy of the Board especially with regard to the development of surplus production; (b) the efforts towards price stability; and (c) the efforts to reduce marketing margins.

a. The price policy of the Board: It appears that the Board has not made any serious attempt to discourage the production of surpluses through adjustments in its basic price policy. Rather would it seem that the Board has accepted the situation as inevitable and has tried to dispose in the most profitable way of the crop that was marketed by producers, no matter what its size, by virtually sealing off the domestic market and offering the surplus stocks only for export. In this it was effectively aided by having a complete monopoly in the domestic market and by operating the Corn Stabilization Fund to cover export losses.

⁵¹Annual Reports of the Corn Control Board for 1951/52 (p.44) and for 1955/56 (p.42).

It has been indicated that production and consumption tendencies by 1949/50 reflected the likelihood of shortages in the domestic supply for the immediate future. This was the main reason why a special incentive to producers was included in the producers' price for the marketing years 1951/52-1955/56 - refer to Table 37.

From the same table it will be observed that the gross producers' price rose from 21 shillings and 3 pence per bag in 1949/50 to 30 shillings per bag in 1952/53, thus an increase of eight shillings and nine pence per bag in three years' time. Against this the basic cost of production plus cost of bag and twine plus the margin for contingencies rose from 15 shillings $4\frac{1}{2}$ pence to 19 shillings and $11\frac{1}{2}$ pence per bag, an increase of only four shillings and seven pence. Farmers therefore made a clear gain of four shillings and two pence in their margin per bag, which represents an increase of 71 per cent in the margin of five shillings $10\frac{1}{2}$ pence that applied in 1949/50. A very substantial increase for such a short period indeed, and it must have provided a powerful incentive to production.

With the exception of the 1952/53 marketing season which had proved an extremely bad crop year on account of prolonged spells of severe drought,⁵² production continued to increase. In 1955/56,

⁵² According to the Annual Report of the Corn Control Board for 1952/53 only 14.5 million bags of corn were marketed by producers as compared to an average of 24.2 million for 1950/51-1951/52.

the last year that a special incentive was paid (nine pence per bag), total corn production amounted to 37,442,000 bags and 4,058,000 morgen were planted to corn by white farmers. This level of production was 9.4 million bags above the highest level reached by domestic consumption up to the time (28.0 million bags in 1951/52). The response by producers was clearly well in excess of the actual needs.

At this juncture the Board's transactions in export corn for the first time reflected losses. In anticipation of losses on export sales the Board (as described earlier) had established the Corn Stabilization Fund in 1954. The principle was adopted that the Government, producers and also consumers would contribute annually to the Fund according to circumstances and with due regard to the ability of each party to pay his due.

Judging from the annual gross producers' price since 1955/56 it would seem that the Board relied entirely upon the "stabilization levy" collected from producers to effect a change in the planned production. The change in gross producers' prices from year to year was based chiefly upon changes in the estimated basic costs of production and the gross producers' price therefore assumed the character of a normal price. Planned production, as indicated by the area planted to corn by white farmers, was not discouraged by the increases in the "stabilization levy" - first from three pence to six pence per bag in 1956/57 and then to 15 pence per bag in 1957/58 and 1958/59. The estimated total production showed no

tendency to return to a level more in line with the domestic requirements, despite the fact that the net producers' margin declined by $16\frac{1}{2}$ pence per bag during the period 1956/57-1958/59 (Table 40).

Table 40. Area planted to corn by white farmers and total production by all groups for the marketing years 1957/58-1959/60 with the averages for 1952/53-1956/57 as comparison.

Period	Morgen planted by white farmers ('000)	Total crop harvested ('000)
1957/58	4,048	43,276
1958/59	4,014	37,526
1959/60	4,235	40,335
1957/58-1959/60	4,099	40,379
1952/53-1956/57	3,768	33,820

Sources: (1) Annual Report of the Corn Control Board for 1958/59, for data relating to the period 1952/53-1956/57.

(2) Figures for 1957/58-1959/60 are estimates supplied to the Board by the Division of Crops and Markets, Department of Agriculture.

It would appear that the gross producers' price was maintained at a sufficiently high level to induce corn producers to keep on producing in spite of the risk of increased stabilization levies. It is remarkable that in the 1957/58 season, for example, when total production exceeded domestic requirements by almost

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is crucial for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for consistent and reliable data collection processes to support informed decision-making.

3. The third part of the document focuses on the role of technology in modern data management. It discusses how advanced software solutions can streamline data collection, storage, and analysis, leading to more efficient and accurate results.

4. The fourth part of the document addresses the challenges associated with data management, such as data quality, security, and privacy. It provides strategies to mitigate these risks and ensure the integrity and confidentiality of the organization's data.

5. The fifth part of the document concludes by summarizing the key findings and recommendations. It stresses the importance of a proactive approach to data management and the continuous improvement of data collection and analysis processes.

53 per cent, the stabilization levy collected from producers amounted to only 4 per cent of the gross producers' price! Few producers, indeed, would fear much harm from overproduction under such circumstances.

Several factors contributed to this state of affairs. Firstly, world market prices were such that the average loss per bag incurred by the Board on sales for export was only about 12 per cent of the gross producers' price. Secondly, the exports of South Africa constitute only a small percentage of the total world trade in corn and increased offerings from South Africa, therefore, could not cause a severe depression of world prices. Thirdly, the Board, by virtue of its one-channel scheme, was in a position to maintain its sales in the domestic market without loss, thereby limiting the unfavourable effect of the surplus to the total losses on export.

Whether the Board is correct in its attitude of not trying to force an adjustment in production is difficult to answer with certainty. Taking a narrow view it can be stated that there is little justification for permitting or encouraging the production of large surpluses of corn that have to be exported at a loss, and that the productive resources thus occupied should be guided into other channels or retired temporarily as "national reserves". On the other hand, it would have been extremely difficult, if not impossible, to bring about such an adjustment either by manipulating prices or by a combination of price measures and production or marketing restrictions. The magnitude of the adjustment that would be required is

prohibitive - the average annual domestic consumption for the period 1954/55-1958/59 amounted to only 71.6 per cent of the annual production, thus a reduction of almost 30 per cent in production would be required to balance it with domestic demand.

The possible effects of some of the structural changes which have been observed in the previous chapter should not be overlooked as a factor that would have reduced the effectiveness of price adjustments. Furthermore, the dominating position of corn as a cash crop introduces the question of whether a reduction of the magnitude indicated would not seriously hurt the cash income position of farmers in general and merely shift the surplus problem from corn to groundnuts, sorghums or some other commodity. There are certain indications that this might be the case, e.g. groundnuts and sorghums are already in oversupply, while it has been pointed out earlier that wheat, although short, is not a good substitute for corn as a cash crop in Area A. From a national viewpoint the present approach could be regarded as having some justification.

Assuming this to be the case, it would seem that the fixing of the gross producers' price receives even greater significance. The criticisms raised earlier against the use of cost of production and the arbitrary manner in which the allowance for managerial remuneration and entrepreneur's profit is determined become even more important. Such an approach also calls for a reconsideration of the place occupied by the Stabilization Fund in the whole price support structure.

At present producers, consumers and the government all contribute to the Fund on a yearly basis. Since the balance in the Fund has reached a level where it is regarded that no net increase will be necessary and the contributions collected each year should be only sufficient to cover the anticipated losses,⁵³ the Fund has assumed the character of an Export Equalization Fund rather than a Stabilization Fund proper. It is, therefore, the more important to stress that the present arbitrary manner in which the burden of the anticipated losses is apportioned to the contributing parties is quite unsatisfactory. There is at present no clearcut delineation of the responsibilities of each group and it is suggested that the problem be approached along the following lines:

In normal circumstances the only parties liable should be the consumers and the producers. The government should be required to contribute to the Fund only if one or both of the first mentioned groups cannot shoulder its rightful burden. The consumers' liability originates from the fundamental need for maintaining production at a level that would be sufficient to meet the domestic requirements. However, due to the wide fluctuations in annual production it would mean that the target for production would have to be set at some level above the domestic needs. In favourable years actual production will then exceed the domestic requirements and the surplus will have to be exported. But the liability of consumers in respect

⁵³Annual Report of the Corn Control Board for 1957/58, p.18.

of the losses on exports will be limited to the quantity of corn represented by the "safety margin" tacked onto the estimated domestic requirements - i.e. if the actual production exceeds the domestic requirements but not the target level, consumers will have to carry the loss on the export of the full surplus; if the actual production exceeds the target level, however, consumers will be liable for the full amount of the loss on that proportion of the surplus represented by the "safety margin" only and producers will be liable for the full amount of the loss on the balance of the surplus (which is represented by the excess of actual production over the target quantity).

A numerical example may be useful: suppose that the domestic requirements are 25 million bags and that to be reasonably sure of meeting this demand the target for production is set at 27 million bags. Then consumers will be liable for the losses on the first 2 million bags of any surplus and producers will be liable for the full export losses on that quantity of the surplus in excess of 2 million bags. Consumers then need have no fear of being burdened with those export losses caused by excessive surpluses; and producers, on the other hand, would be assured that a reasonable surplus due to favourable weather conditions and not to chronic over-production would not depress the price of his product. A system of this nature helps producers to recognize that the marginal price is lower than the actual (average) price. While it will have little effect on individual incentives under the present system it does give



a signal for policy. If this were coupled with farm quotas it could be put on an individual basis.

It has frequently been pointed out by critics that the present policy of maintaining the same producers' price over the whole country cancels out completely any price advantages that might have been enjoyed by producers situated close to the major consumer areas. This is undoubtedly true, but it should also be pointed out that a single price greatly simplified the application of control measures. As it is, producers close to the consumer areas have been forced to sacrifice part of their incomes to the benefit of producers in the more remote areas, thus causing a redistribution of the total income from the same total output. Since the greater proportion of the increase in corn production has taken place in the traditionally important producing areas, it would appear that the system of a single price has not caused too much distortion in the geographical pattern of production.

It still remains to determine what progress, if any, has been made toward the more general goals of price stability and reduced price spreads.

b. The stabilization of prices: It has already been pointed out that under the present scheme the producers' price fixed for corn at the beginning of the season does not vary during the course of the season but remains constant. The fact that no intraseasonal variations occur greatly simplifies the decision of a producer whether or not to market his corn. In earlier days he did not know with any

degree of certainty how prices were going to behave during the season and it was not easy to decide whether the corn should be marketed, and if so at what particular moment it should be marketed. Needless to say, this also benefited the trade and milling industry, since they could plan their operations with greater certainty. However, it also removed the opportunity for speculation thereby affecting the profitability of many concerns.

A comparison of changes in producers' prices during two nine-year periods, 1924/25-1932/33 and 1950/51-1958/59, indicates that interseasonal fluctuations have been significantly reduced under the present scheme, since the standard deviation for the second series of prices is only 22.5d. against 38.6d. for the first series. An even better indication of the Board's success in stabilizing prices is the reduction in the magnitude of the coefficient of variation which decreased from 29.92 per cent for the first period to only 6.42 per cent for the second period (the means being 129.00d. and 350.67d. respectively).

The question arises, however, to what extent efforts should be directed solely at stabilizing prices over time. Would it not be advisable to pay more attention to the stabilization of incomes from year to year? The point has been made earlier that modern farming techniques require greater cash outlays, which in turn raised the level of minimum cash income necessary to enable the farmer to maintain production and still make a decent living. This aspect of the farm issue has received little attention in the past.

The basic idea behind price stabilization should not be to reduce year to year fluctuations to zero, but merely to keep any fluctuations which may result from changes in market conditions within reasonable limits. Price stabilization is not a fundamental goal and the weight to be attached to it in agricultural policy should be determined only in the light of the situation in general. The real choice should not be between complete price stabilization or no price stabilization, but between various tolerance limits within which fluctuations would be permitted.

The present method whereby the costs of storage, handling and administration are combined and expressed as a fixed amount per bag - called the Board's margin - while an average margin is also fixed for millers, enables the Board to stabilize basic consumers' prices almost parallel to basic producers' prices - i.e. without their respective contributions to the Stabilization Fund.

The consumers' subsidy paid by the government on corn sold by the Board for domestic consumption is an additional measure by which consumers' prices could be stabilized. Since 1955/56 it has become the general rule that the Government subsidy shall equal the Board's margin, but there is no reason why the subsidy could not become variable in order to offset limited fluctuations in producers' prices if highly stable consumers' prices should be regarded as absolutely essential. In the event of the subsidy being removed a domestic price equalisation fund could be used to prevent year-to-year changes in producers' prices from unduly disturbing the levels of consumers' prices.

There are two major considerations which make it desirable to have stable consumers' prices, namely, the fact that corn and corn products form a staple food of the middle and low income groups thus having an important effect upon their food bill and costs of living; secondly, since corn constitutes a factor of production in the dairy, livestock and poultry branches of farming, corn prices also have a direct effect upon the prices of such products. It would seem, however, that a moderate degree of stability in consumers' prices would be adequate and that no good reasons exist for a policy of extreme stability. There is therefore no reason why controlled fluctuations in producers' prices should not be permitted in order to stabilize producers' cash income from corn.

The degree of stability in producers' prices which has been maintained by the Board, even during the past years when large surpluses appeared on the market, no doubt has reduced price uncertainty. As indicated earlier, the reduction in price uncertainty encourages technological advance, capital investment and an expansion in production. This may be the single most important factor in the growth of surplus production. Thus it can be concluded that the fundamental goal of increased productivity has been promoted with at least some degree of success through the Board's price policy.

c. Efforts to reduce the marketing margins: The Board's efforts towards this objective were six in number:

(1) One of the major aims of the Board is to eliminate or at least minimize the cross-haulage of corn. This could be taken

care of in respect of corn in the grain by allocating orders from millers in consumer areas only to storage points in surplus producing areas. The Board has, however, not been able to do much about excessive railage cost incurred as a result of the cross-haulage of corn products.

(2) The Board limited the number of intake agents originally appointed, with a view to reducing marketing costs by exploiting economies of scale. While the convenience of producers has always been borne in mind, the Board has subsequently followed a policy of restricting new entrants where existing facilities were already adequate.

The same approach has been followed in respect of commercial mills. However, since only the number of registered mills was restricted but not their respective milling capacities, the protection afforded members of the milling industry was more apparent than real. Although there was little change in the number of registered commercial mills the available maximum milling capacity has been steadily increasing. The increase in roller capacity actually exceeded the increase in turnover with the result that the national average percentage of utilization declined from 53.4 per cent during 1949/50-1951/52 to 41.5 per cent during 1956/57-1958/59.⁵⁴ It was calculated in 1951/52 that fixed costs represented approximately 49 per cent of the basic miller's margin.⁵⁵

⁵⁴Internal records of the Board.

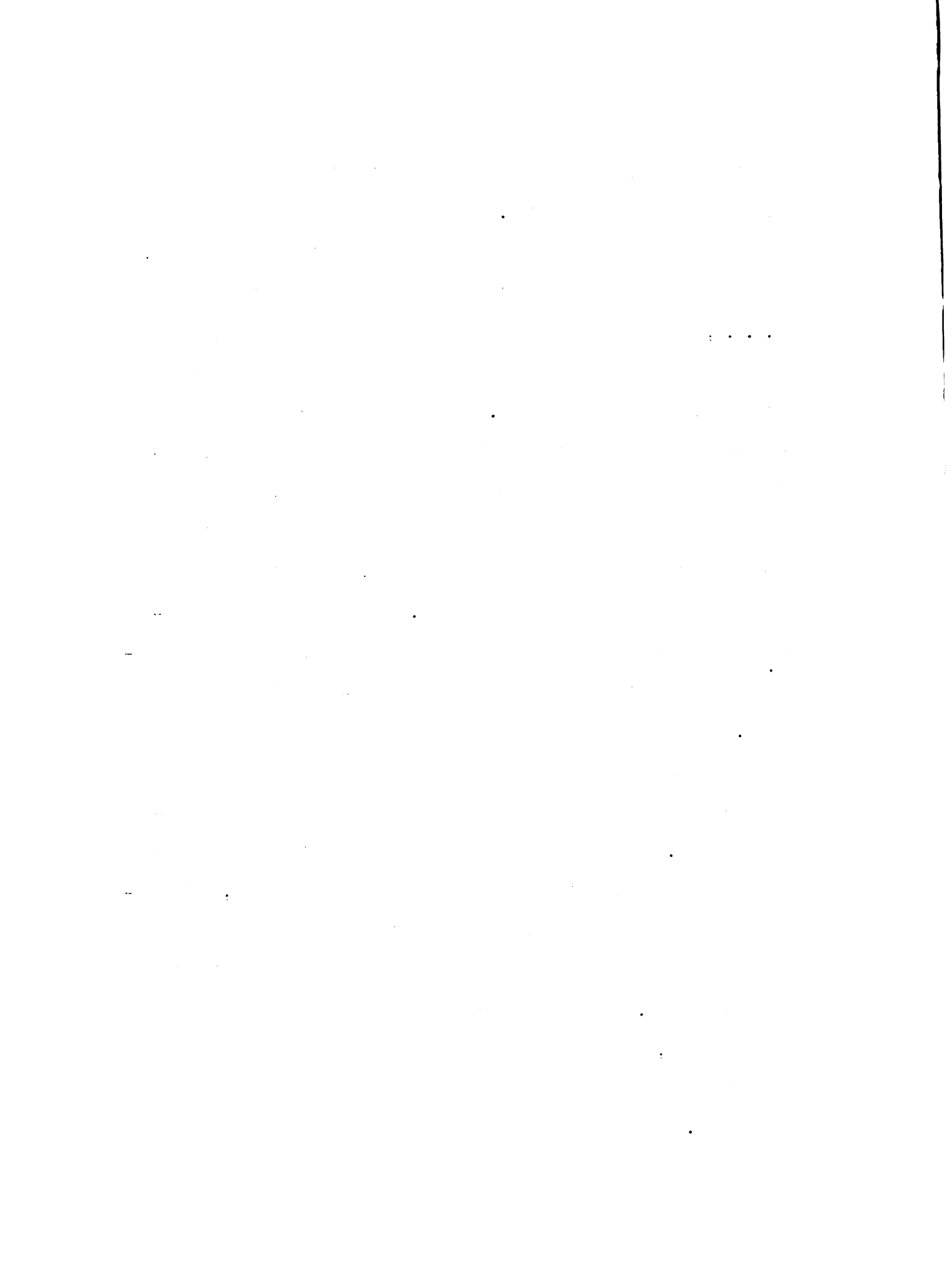
⁵⁵Internal records of the Board.

In these circumstances it is clear that the development of excess capacity must have prevented the full realization of the potential savings in processing margins.

The effects of the Board's policy to limit new entrants, to maintain uniform producers' prices and uniform selling prices (f.o.r.), and to reserve local corn for local mills may have been important as far as the location of mills or the expansion of existing capacity is concerned. Without considerable additional research it is not possible to judge the effects of the abovementioned factors on the cost structure of the industry.

(3) The Board has also attempted to reduce the price spread by fixing intake and storage charges, processing fees and retail margins on a conservative basis. The actual rates applicable are averages determined by means of cost investigations undertaken by the National Marketing Council in co-operation with the Board.

Storage and handling charges are paid by the Board at fixed rates for the whole season; thus there is no seasonal factor involved. To the extent that human consumption accounts for most of the domestic disappearance of marketed quantities, it is perhaps not too important that consumption in the first half of the season should carry part of the storage burden of consumption in the second half. But if commercial feeding of livestock increases in importance, a seasonal factor in the price to encourage feeding early in the season may be necessary in order to reduce storage operations.



(4) Equally important were efforts to increase the available storage capacity of the trade. Only a small proportion of the crop is retained on farms and since the producers' price remains constant throughout the season farmers were not encouraged to undertake the construction of proper storage facilities. This function has shifted almost entirely to agents (particularly co-operatives) and millers, as can be seen from Table 41 below:

Table 41. Storage facilities available for corn.

Storing Group	C a p a c i t y	
	Before 1940 ⁽¹⁾	1958/59 season ⁽²⁾
	'000 bags	
Co-operatives	5,000	23,040
Miller agents	1,240	5,341
Other millers (non-agents)	1,030	3,174
Trader agents	500	1,429
Elevators	1,700	2,350

Sources: (1) Report of the Commission on the provision of storage facilities for maize, unpublished, 1948.

(2) Internal records of the Board.

With a view to improving existing methods of handling and storing corn, the Board sponsored valuable pilot research projects in the field of bulk storage, the treatment of corn with insecticides and the standardisation of measures promoting store hygiene. In this manner physical losses during storage will even-

tually be reduced to a minimum.

(5) Grading regulations and packing and quality standards were developed and enforced. A full time inspection staff makes it possible to supervise the activities of agents and millers and thus to protect the interest of producers, middlemen and consumers.

(6) An important objective of the Board has always been to maintain an effective but economic administration of the program. Investigations indicate that the costs of "paperwork" by the Board and its agents compare very favourably indeed with that of private marketing agencies and wholesale distributors.⁵⁶

The combined effect of the measures listed above has been to reduce the marketing margin. The difference between the producers' price of corn and the traders' price of sifted granulated corn meal (when 1800 lb. or more is purchased at a time) is expressed as a percentage of the producers' prices for the two periods 1935/36-1939/40 and 1954/55-1958/59, in Table 42.

It is clear that the margin expressed as a percentage mark-up has been reduced substantially by the Board, and it can, therefore, be concluded that this secondary goal has been pursued with some degree of success. It is admitted that the margin calculated above does not constitute the complete margin, because it has not been calculated from average consumers' prices. Since the latter

⁵⁶During 1958/59, e.g., Administrative costs of the Board (including short-term financing to regular buyers) plus handling remuneration to agents on reconsigned deliveries (i.e. where no physical handling was involved) amounted to 8.8 pence per bag, or just under $2\frac{1}{2}$ per cent of the producers' price. Brokers informed that the charge for similar services in the trade would be $2\frac{1}{2}$ per cent.

Table 42. Difference between the producers' prices of corn and the traders' price of sifted granulated corn meal (purchases of 1800 lb. or more) during the periods 1935/36-1939/40 and 1954/55-1958/59.

Marketing year	Producers' price (pence per 200 lb.)	Margin (pence per 200 lb.)	Margin as percentage of producers' price	Marketing year	Producers' price (pence per 200 lb.)	Margin (pence per 200 lb.) [*]	Margin as percentage of producers' price
1935/36	104	87.25	83.9	1954/55	372	150.0	40.3
1936/37	147	61.25	41.7	1955/56	363	157.7	43.4
1937/38	106	73.00	68.9	1956/57	360	161.8	44.9
1938/39	106	63.25	59.7	1957/58	360	165.5	46.0
1939/40	102	67.50	66.2	1958/59	354	163.7	46.2

^{*}The consumers' subsidy paid by the Government on all corn sold by the Board for domestic consumption has been added to the traders' price in order to obtain the true spread between prices.

Sources: (1) The Board's Memorandum to the Marketing Act Commission, November, 1947, p.20.

(2) Annual Reports of the Board for the years 1954/55-1958/59.

prices were not available for the period before prices were controlled, however, the comparison had to be based on wholesale prices. It is suggested that the conclusion arrived at above is still valid, particularly because the retail margin has been fixed on the same conservative basis as the wholesale margin and it does not constitute a major proportion of the total spread between producers' and consumers' prices.

The achievement is the more noticeable since the traders' prices during the second period include the consumers' contribution to the Corn Stabilization Fund (refer Table 39) which places it on a comparable basis with the prices during the first period when traders sought to recover losses on exports by raising their sales prices in the domestic market.

While there can exist little doubt that the increase in milling capacity which has been noted has gone hand in hand with an increase in technical efficiency, it is not clear whether any real gain in economic efficiency for the milling industry as a whole has been achieved. The decrease in percentage utilization of available capacity is an unhealthy sign. Despite the retarding influence of overcapacity in the processing industry, however, the percentage spread between producers' and consumers' prices has been noticeably reduced.

General conclusions: The following general conclusions seem to be in order:

(1) Technological changes - fertilizer, hybrid corn, and mechanization - have increased average yields and encouraged expansion of production. The gains from increased yields per morgen have been just sufficient to offset increases in factor prices. Unit costs have been fairly stable during recent years.

(2) The level of producers' prices has not been adjusted sufficiently to discourage increased production.

(3) The increased stability of interseasonal prices at favourable levels has encouraged increased application of new techniques, thus contributing to increased production.

(4) As a result of these developments, surpluses and losses on exports are now a clear feature of the South African program. The present arbitrary manner in which the incidence of export losses is distributed should be replaced by a more formal method.

(5) The program does not provide material assistance for the small farmer and subsistence corn producer who has little or nothing to sell.

(6) The existing program has become a means of redistributing income, first from years of strong world prices to years of weak world prices, and now from other sectors of the economy to corn producers. The uniform price system has, furthermore, caused a redistribution of income among producers by nullifying any geographical advantages that might have been enjoyed by producers close to the consuming areas.

(7) The absence of a clear indication of the Board's viewpoint on the question of whether an adjustment of corn production to the domestic requirements should be pursued as a practical goal is unfortunate. The situation has reached a stage where a decision in the matter is absolutely essential. At the same time it would seem advisable to examine the experience of some other corn producing country such as the United States of America in order to determine whether the present system of control is adequate and appropriate.

CHAPTER IV.

UNITED STATES PROGRAMS FOR CORN.

There exists extensive literature covering the history and problems of agriculture in the United States. Much has been written during the past quarter century about the need for Government support for agriculture and how it could or should be fitted into a comprehensive, forward looking farm policy.

In this chapter the U.S. programs since 1938 will be reviewed. The basic assumptions and main objectives of U.S. agricultural policy in general will be discussed prior to an examination of the specific programs for corn.

Historical Background to 1938:¹

During the first decade of the present century agriculture was in a relatively good economic position. Farm prices had recovered substantially from the low levels of the late 1800's, and with a rapidly expanding national economy business prospects in general were bright. There was also a very good export market for surplus agricultural products, and this state of affairs was accentuated by World War I.

After the war, however, the situation changed. The U.S. found herself in the new role of creditor nation rather than in the accustomed role of debtor to Britain and Europe. Unfortunately

¹A very useful reference on the subject is Benedict, M.R. Farm Policies of the United States, 1790-1950 (The Twentieth Century Fund, New York, 1956).

her foreign trade policy was not quickly adjusted to the new situation.

Government credits to the allied nations were terminated in 1920, and these countries as well as Germany found it very difficult to meet their obligations to the U.S. Instead of encouraging trade to provide them with an opportunity of earning dollars, the U.S. raised its tariffs, e.g. the Fordney-McCumber Act of 1922. Inflationary expansion in agriculture continued into the postwar period and the depression of 1921 caused severe hardships in farm areas. The agricultural sector did not share equally in the recovery that followed and this stimulated growing demands for legislative programs in support of agriculture.

The notion that a lack of monopoly power in the market caused agriculture to suffer much more than industry during bad times emerged very strongly. Farm organizations were reluctant, though, to sacrifice their own freedom of action by inviting large scale government intervention. Their efforts were, therefore, aimed toward establishing large-scale commodity co-operatives under their own management but under special legal provisions, and with governmental blessings. Despite sympathetic governmental attitudes and legislative support such as was provided by the Capper-Volstead Act of 1922 and the Co-operative Marketing Act of 1926, the co-operative movement did not achieve the desired effects.

Farm organizations began to press for more direct support. The bitter fight for passage of the McNary-Haugen two-price plan

for export products is an outstanding example. The Agricultural Marketing Act of 1929, though much milder than the McNary-Haugen proposal, was somewhat of a compromise. With "economic equality" for agriculture as its objective it can be regarded as the legal origin of the parity concept,² and it certainly marked the beginning of a new era in agricultural policy. The Act provided, inter alia, for the establishment of a Federal Farm Board to assist, financially and otherwise, farmers' co-operative marketing associations. This included making loans to stabilization corporations set up by co-operative associations to prevent periodic surpluses from unduly depressing the markets for storable commodities.

The failure of the Federal Farm Board was inevitable with the 1929-33 price debacle but it was hastened considerably by relatively good crop years during 1930-32. The agricultural crisis that developed is well documented; suffice it to say that gross income from agriculture dropped from 12,791 million to 5,562 million dollars between 1929 and 1931.³ This Farm Board experiment demonstrated that commodity stabilization programs by themselves cannot correct surplus problems caused by a fundamental imbalance between supply and demand.

²Tontz, R.L., "Evolution of the Term Parity in Agricultural Usage", Southwestern Social Science Quarterly, March 1955, Vol. 35, pp.345-355.

³Agricultural Statistics (United States Department of Agriculture, 1939), p.482.

The Agricultural Adjustment Act of 1933 was an attempt to remedy this weakness. The far-reaching powers granted to the Secretary of Agriculture were, broadly speaking, of two kinds: those designed to control production and increase farm income, and those designed to control marketing activities and margins. The funds to finance these programs were to be derived mainly from processing taxes levied on farm products.

Important features of the Act were the following: It contained the first explicit definition of the concept that became known as "parity"; it clearly specified the related base periods; and it listed the basic commodities for which benefit programs could be undertaken.

Corn and hogs were included in the list of basic agricultural commodities. Eligibility for benefit payments required that farmers reduce corn acreage by at least 20 per cent and hold hog numbers to 75 per cent of the numbers produced in the base period.

It soon became evident that raising prices and incomes through reducing production would involve a time lag that the emergency of the moment did not permit. One of the most important supplementary measures then taken (October 1933) became the backbone of almost all subsequent price-support programs: The Commodity Credit Corporation (CCC) was established to administer a purchase and loan program. Although it was somewhat similar to the Federal Farm Board, the new agency operated under more flexible procedures. A loan program for corn was promptly initiated.

While the Agricultural Adjustment Administration was still struggling to make effective the 1933 proposals, the United States Supreme Court ruled (January 6, 1936) that the processing taxes were unconstitutional and invalidated the whole program of which the taxes formed an integral part.⁴

In 1936 the Soil Conservation and Domestic Allotment Act was passed to provide a legal framework within which the acreage control program could be carried out. The new Act called for direct federal payments to farmers for reducing the acreage of "soil-depleting" crops and increasing the acreage of "soil-conserving" crops. The crops classed as soil-depleting were essentially the same as the "basic commodities" and corn farmers once again qualified for support.

At this time more and more consideration was being given to the need for a long-term agricultural program. The 1933 programs were influenced too much by short run income objectives, and the 1936 program despite its recognition of long run objectives, such as soil conservation, was largely a stopgap measure. The Agricultural Adjustment Act of 1938 was introduced, therefore, as a comprehensive long-term program.

Before turning to a discussion of the specific programs for corn that have developed since 1938, it may be well to look at

⁴U.S. v. Butler et al., Receivers of Hoosac Mills Corporation,
297 U.S. 1 (1936).

the basic assumptions and main objectives underlying the long-term policy for U.S. agriculture in general.

Basic Assumptions and Main Objectives:

Since the time that a long-term policy for agriculture was under consideration in the 1920's, the basic assumptions and main objectives of U.S. farm policy have frequently been discussed by agricultural experts. There appears to be general agreement on most fundamentals but differences do exist with respect to emphasis and secondary issues. Before an appraisal of individual commodity programs can be undertaken it is necessary to establish the general or overall considerations which define its scope and rationale.

Basic assumptions: The following assumptions have been suggested as necessary in order to justify a long-term policy for agriculture:

a. Firstly, "the wish to establish and maintain American Agriculture on a proprietary land-owning family basis" is an important goal.⁵

The statement rests largely upon the belief that the family farm is a superior form of agricultural organization. This in itself embodies the three traditions described by Motheral as follows:⁶

⁵Wilson, M.L., "Validity of the Fundamental Assumptions Underlying Agricultural Adjustment", Journal of Farm Economics, Vol. 18, 1936, pp.12-26.

⁶Motheral, J.R., "Family Farm and the Three Traditions", Journal of Farm Economics, Vol. 33, 1951, pp.514-529.

(1) Agrarian tradition-- "a peculiar property of goodness arises from the relationship between the soil and the man who tills it."

(2) Democratic tradition-- "the family farm is an especially effective mechanism for developing the spirit and habit of responsible citizenship."

(3) Efficiency tradition-- "that any self-respecting man is duty-bound to combine effort, skill and substance in such a way as to get the most possible from every resource at hand."

b. Secondly, that the way to achieve parity for agriculture is to be found in price raising and price maintenance.⁷ This assumption implies that farm incomes will be raised by higher farm prices. It also implies that the producers of large amounts of products should receive just as much help per unit as those producing small amounts of farm products.

c. Thirdly, that under the ruling conditions fair returns to farmers could not be achieved without controlling production.⁸

This implied:

(1) That a two-price plan involving exploitation of foreign markets was less likely to succeed, particularly because since 1929 anti-dumping laws and various kinds of trade restrictions had been adopted by West European countries.

⁷Jesness, O.B., "Validity of the Fundamental Assumptions Underlying Agricultural Adjustment", Journal of Farm Economics, Vol. 18, 1936, pp.27-43.

⁸Wilson, M.L., op. cit.

(2) That demand elasticities for farm products were such that a reduction in supply would increase total returns to farmers.

(3) That a production control program could be carried out effectively.

In this respect it must further be pointed out that acreage control and production control are not identical. Variation in yield due to uncertain weather is an important short-run factor while technology is important in the long run. Both can keep acreage control from reducing production.

d. Fourthly, that "collective action under Government co-operation was the only way farmers could achieve the tremendous adjustments necessary."⁹

This reflected the belief that agriculture was worse off than industry and trade because the latter possessed much more monopolistic power; that the only way to protect agriculture was to introduce monopolistic power through Government action.¹⁰ In this respect it should be kept in mind that much of the ability of industry to reduce production results from a definite distinction between employer and labourer, while in agriculture these functions are frequently combined in one person.¹¹

⁹Ibid.

¹⁰Jesness, O.B., op. cit.

¹¹Benedict, M.R., "Production Control in Agriculture and Industry", Journal of Farm Economics, Vol. 18, 1936, p.458.

The statement may also be understood to imply that administrators can plan and decide production programs better than the individual producer. This places a high premium on accuracy and reliability of both long-and short-run expectations. The planners risk severe criticism that could have political repercussions if a short supply should result from such a program.¹²

Main objectives: The goals of public policy are only intermediate-- they represent means for the attainment of the ultimate goals of individuals.¹³ To the extent that pressure groups may be present in a democratic political environment there exists the danger that public policy may frequently not be in proper alignment with general welfare. The political role of the various farm organizations in the United States indicates that some of the programs for agriculture have been attained in this manner.

Agricultural policy objectives can be grouped into the following categories:¹⁴

¹²Warren G.F., "Discussion on Objectives in National Agricultural Policy", Journal of Farm Economics, Vol. 20, 1938, p.51ff.

¹³Johnson, D. Gale, Forward Prices for Agriculture, (Chicago, University of Chicago Press, 1947), p.14.

¹⁴The general classification presented here follows the outline of D.R. Kaldor in his paper: "Farm Policy Objectives: A setting for the Parity Question", Policy for Commercial Agriculture, (Joint Committee Print, 85th Congress, Nov. 22, 1957), pp.499-507.

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a. Income objectives: This category represents perhaps the most important and most publicised sub-set of agricultural policy objectives. They are:

(1) To ensure for agriculture a fair share of the national income. This means not only correcting some given unbalances but also ensuring that in the long run farmers will share equitably in the increased wealth to be derived from economic growth.

(2) To ensure within agriculture an equitable distribution of its total share -- with particular attention focused on the need to provide for at least a minimum level of subsistence based on social welfare criteria.

(3) To mitigate or reduce sharp fluctuations in farm incomes that are due to inherent characteristics of the demand and supply relations in agriculture.

Higher and more stable prices for farm products have frequently been listed as a primary objective. Although prices strongly influence farm income it would be dangerous to insist upon raising all prices with complete disregard of fundamental relationships.

b. Agricultural resource use and productive efficiency: Apart from the fact that efficiency is of great importance at any stage of economic activity, much stress has been laid upon the need to restore and maintain, or improve, the fertility of the soil. It is essential that short-run gains which may result from maximizing current returns should be weighed against the loss of future productive capacity.

The following objectives would fall in this category:

- (1) To ensure that an adequate supply of food and fiber, geared to the pattern of demand, is produced.
- (2) To encourage increasing efficiency in farming so to ensure that the required output is produced with a minimum of resources.
- (3) To promote the conservation of the nation's soil resources.
- (4) To promote flexibility and thus to improve the ability of the industry to adjust to problems caused by the dynamic factors involving development and growth.

c. Agricultural organization and farm population: Following directly from the assumption that the family farm is a basic source of "strength and vitality to our entire social order", one of the main objectives of agricultural policy has been: to support and promote the family-sized farm as the ideal form of agricultural organization.¹⁵

The family farm is a rather vague concept. The following unidentified contribution represents one attempt to define it succinctly: "a family farm ceases to be a family farm when the cost of hired labor becomes a critical factor in the success or failure of the business."¹⁶

¹⁵Soth, L., Farm Trouble (Princeton, Princeton University Press, 1957), pp.21-28.

¹⁶Quoted by J.R. Motheral, op. cit., p.529.

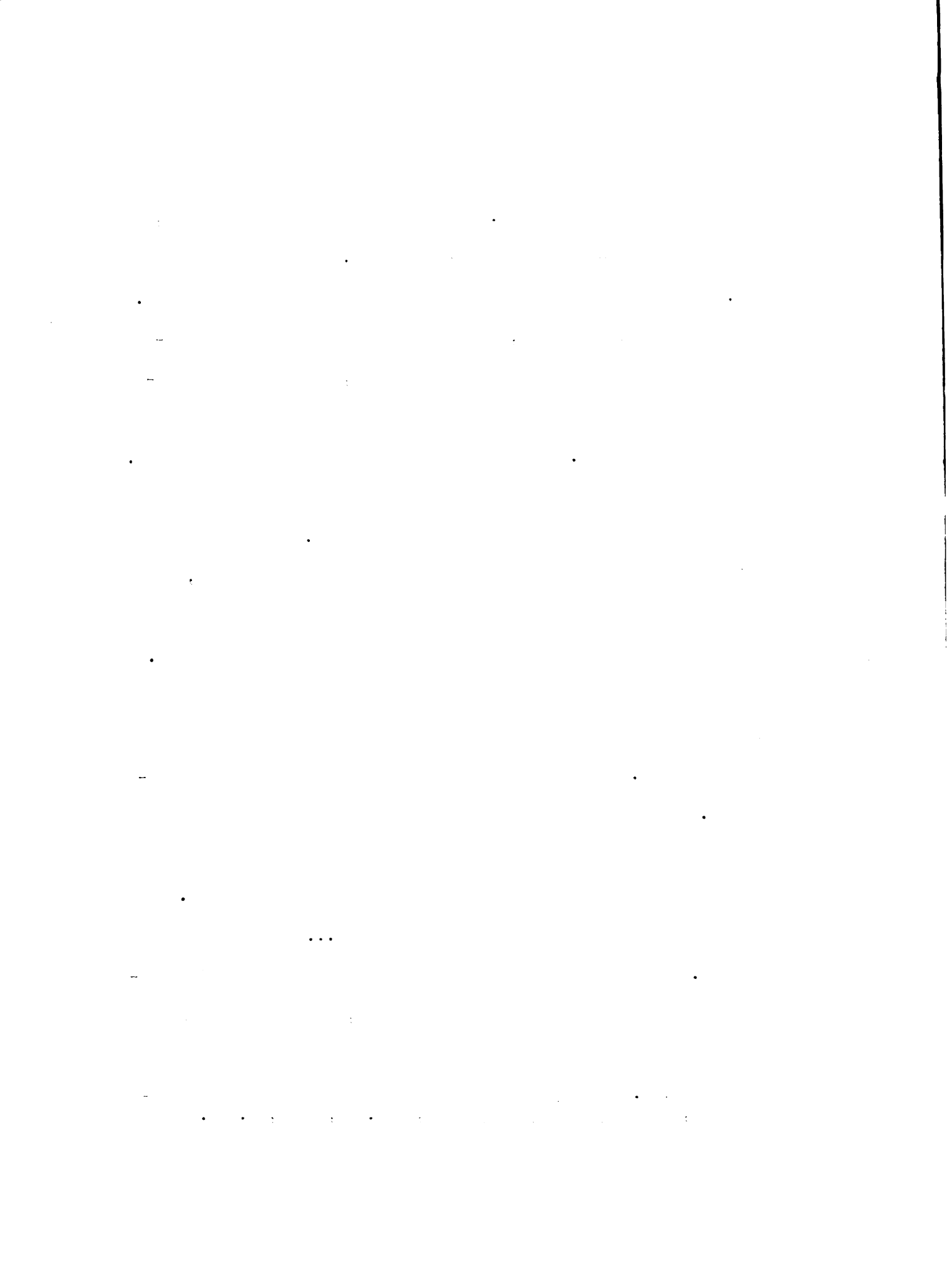
Closely associated with this attitude is the view that security of tenure should be safeguarded and that adequate credit for farmers should be provided. These measures will, of course, also promote income-and efficiency-objectives.

d. Political and Economic freedom: Freedom is a basic value. The main approach, therefore, was that although government intervention in agricultural affairs was necessary, the individual farmer should be allowed a maximum amount of freedom over political and economic decisions. The democratic process must be maintained.

These objectives may all be highly meritorious but it seems unlikely that the whole set can be achieved. Although a certain degree of complementarity exists between, for example, greater productive efficiency and higher farm incomes both seem to call for considerable direct and indirect government intervention. There are also indications that an optimal allocation of resources would call for reducing the supply of labour and increasing the size of the farm unit. This may be harmful to the objective of the family farm.

Another important conflict is that between security and equity on the one hand and development and growth on the other. "Growth comes through change and causes change ... Output must be redesigned."¹⁷ A rise in GNP normally does not mean an equiproportional increase in all branches of production, and relatively low

¹⁷Wright, D. McCord, "Our Agricultural Policies and Our Economic System", Journal of Farm Economics, Vol. 34, 1952, p.630.



income-elasticities for food indicate the problems agriculture may expect to encounter in the future.

In the absence of a system that would enable quantitative measurement of the social desirability of policy objectives and of its level of practical fulfillment, it is very difficult to make a proper choice. Yet society has to choose and the choice necessarily involves a compromise.

The nature of the compromise can be explained in terms of the well-established principle of equating marginal rates of substitution. It is not absolute values that determine, for example, how farmers vote on freedom of farm operation versus higher real income, but the marginal rates of substitution between these values. "It seems that two or more of these values which may conflict when considered in an absolute sense are probably complementary for certain ranges at their margins. Thus we can have programs which increase both freedom and security within certain ranges, which if carried to extremes would result in a decrease in one or the other."¹⁸

In addition it should be mentioned that the extent to which one objective impinges upon another would be greatly influenced by the actual methods employed to attain them, and perhaps by the pattern through which the decision position is reached. Where alternative methods exist these aspects should be considered before a final selection is made.

¹⁸Hathaway, D.E., "Agricultural Policy and Farmers' Freedom: A Suggested Framework", Journal of Farm Economics, Vol. 35, 1953, pp.496-510.

It is obvious that programs to achieve the goals outlined will have to be adjusted to the nature of individual commodities or groups of commodities. The production and marketing characteristics of commodities to be supported must be considered in each case, as well as the nature of consumption-- whether it is a final product, an intermediate product, whether export demand is of importance, etc.

In the following pages the programs for corn since 1938 will be reviewed. It would be well to bear in mind that the measures applied to corn did not necessarily apply to all other commodities; neither would success (or failure) of the corn programs necessarily vindicate (or condemn) agricultural support programs as such.

United States' Corn Programs since 1938:

United States' price policies since the thirties have aimed at establishing and maintaining an equitable relationship, in economic terms, between agriculture and the rest of the economy-- the principle of parity for agriculture.

"This essential principle is that at any given time there is a ratio between the incomes of different groups in society, and accompanying prices, which on the one hand represents equal returns for equal effort, and on the other, a balanced allocation of effort and resources in different lines of production. Whenever incomes and prices, and distribution of productive effort, become unbalanced

in this sense, then society as a whole is the worse for it; ... It becomes one of the major objectives of economic statesmanship to readjust such unbalances; ..."¹⁹

The Agricultural Adjustment Act of 1938 contained the following explicit definitions of parity prices and parity income:

Parity prices would be calculated in such a manner as would "give to the commodity a purchasing power with respect to articles that farmers buy equivalent to the purchasing power of such commodity in the base period; and, in the case of all commodities for which the base period is the period August 1909 to July 1914, which will also reflect current interest payments per acre on farm indebtedness secured by real estate, tax payments per acre on farm real estate, and freight rates, as contrasted with such interest payments, tax payments, and freight rates during the base period."

Parity income "shall be that per capita net income of individuals on farms for farming operations that bears to the per capita net income of individuals not on farms, the same relation as prevailed during the period from August 1909 to July 1914."

These definitions have been modified through the years but the basic objective remained.

It was rather difficult to translate the goal of parity income into a more practical statistical concept. As a result

¹⁹Black, J.D., Parity, Parity, Parity, (Harvard Committee on Research in the Social Sciences, 1942), p.348.

parity prices represent the only part that became operational. This is unfortunate, for there exists no good reason to assume that parity prices would yield parity incomes.

Parity prices occupy an important position in the structure of United States agricultural support programs since all the individual programs have been linked with the Parity Index. In this sense one might conclude that: "parity prices have provided the Department (of Agriculture) with an over-all policy."²⁰

Corn Programs for the period 1938-1948: In the Agricultural Adjustment Act of 1938, corn was again listed as a basic commodity. The most important regulations with respect to corn were:

(1) The Secretary of Agriculture could allot acreages in accordance with the provisions of the Soil Conservation and Domestic Allotment Act of 1936. The total acreage allotment for a marketing year is to be designed so as to provide a normal supply of corn at normal yields (normal supply was defined as: domestic consumption during preceding marketing year plus estimated exports for ensuing marketing year, plus 7 per cent allowance for carry-over).

In the event of allotments being made, only farmers who complied were eligible for conservation payments, while non-recourse loans were also restricted to "co-operating" farmers with the exceptions listed in(3) below.

Allotments were assigned in the commercial corn areas, and were in effect until war-time adjustments were necessary in 1942

²⁰Schultz, T.W., Redirecting Farm Policy (The McMillan Co., New York, 1943), p.6.

(commercial was defined as: all counties in which the average production of corn during the preceding 10 years, after adjustments for abnormal weather conditions, is 450 bushels or more per farm and 4 bushels or more per acre of farm land in the county).

(2) The Secretary could establish marketing quotas if the estimated total supply exceeded normal supply by more than 20 per cent, or when the average farm price for three successive months of the preceding marketing year has been 66 per cent of parity or less. All marketing quotas were to take effect unless more than one-third of the farmers concerned opposed it in a referendum.

Marketing orders were never offered to corn producers.

(3) The Act once again provided for CCC loans to farmers. The loans were mandatory (on the USDA) in the commercial corn areas if the market price on November 15 was below 75 per cent of the parity price, or if the November estimate of production exceeded a normal year's domestic consumption and exports.²¹

The Act provided for a sliding scale of support levels ranging from 75 per cent of the parity price when expected supply equalled a normal year's domestic consumption and exports down to 52 per cent of parity when expected supply exceeded the specified level by more than 25 per cent.

Loans could also be made to "non-co-operators" in the event that allotments as well as quotas were in effect.

²¹Benedict, M.R., Farm Policies of the United States, 1790-1950 (New York, The Twentieth Century Fund, 1953), p.377.

It would appear that some degree of success was achieved in reducing acreage, as the area planted steadily declined from 97 million acres in 1937 to 87 million acres in 1941. However, increased yields, largely as a result of the widespread use of hybrid seed corn, more than offset the reduction in acreage. By October, 1940, CCC stocks were a record 471 million bushels.

World War II caused an increase in demand for livestock products which, in turn, led to an increased demand for corn. Abnormally high stocks were worked down reasonably fast, particularly after old CCC holdings were made available to feeders at prices somewhat less than book value. Scarcities began to develop and market prices became more favourable. In 1943 a price ceiling was imposed at 100 per cent of parity.

The maximum loan rate level was raised from 75 per cent to 85 per cent in 1941, and again to 90 per cent in 1944. With market prices most of the time exceeding the support price relatively little corn was put under loan. By 1945 a serious shortrun shortage had developed and even though the CCC offered a bonus of 30 cents per bushel above ceiling prices it could not obtain more than 34 million bushels.²²

The abnormal conditions during World War II, when production was encouraged rather than discouraged, brought forth a government guarantee to continue support at 90 per cent of parity for two

²²Benedict, M.R. and O.C. Stine, The Agricultural Commodity Programs, (New York, The Twentieth Century Fund, 1956), p.212.

years after the war. This was intended to aid an orderly readjustment to peacetime conditions. It also afforded Congress an opportunity to review and improve the prewar programs before lifting wartime measures.

Corn programs since 1948: To "review and improve" was easier said than done. The Aiken bill, introduced in the Senate, represented a comprehensive long-run approach which, inter alia, stressed the need to encourage soil conservation practices and to return to flexible levels of price support.

The Hope bill, introduced in the House at about the same time, was much narrower in scope and dealt mainly with the level at which prices were to be supported.

In order to end a prolonged deadlock before the war-time controls would expire a compromise was reached.

a. The Agricultural Adjustment Act of 1948: The Act consisted of three titles.

Title I represented essentially the Hope bill, and determined, inter alia, that:

(1) Effective January 1, 1949, the prices of corn and other basic commodities would be supported at 90 per cent of parity until June 30, 1950-- provided that producers had not disapproved marketing quotas for that year.

Prices to non-co-operators were to be supported at 60 per cent of the rate to co-operators, and only on such quantity as would be subject to penalty if marketed.

(2) Section 22 of the Agricultural Adjustment Act of 1933, as amended, be revised to allow for import quotas or fees on any agricultural commodity if such imports may jeopardize or threaten the effectiveness of price support operations.

Titles II and III represented essentially the Aiken bill and were not to become effective before January 1, 1950. They added the following features:

(3) (i) Parity prices would be adjusted so that individual parity prices would maintain the same relative relationships between commodities as prevailed during the most recent ten years, while the parity level for agricultural prices in the aggregate would continue to reflect the 1910-1914 relationship with non-agricultural prices.

(ii) To dampen the effect of any drastic changes that may result in the level of parity prices for individual commodities, a period of transitional parity prices was allowed-- the rate of adjustment not to exceed 5 per cent per year.

(iii) The range within which loan rates could fluctuate was raised from the 1938 level of 52-75 per cent of parity to 60-90 per cent. The lower limit applied when expected supply was 130 per cent or more of the normal supply and the upper limit applied when it was 70 per cent or less of the normal supply.

When acreage allotments and/or marketing quotas were in effect the support price, as determined, could be increased by 20 per cent but not to exceed a maximum of 90 per cent of parity.

(4) The prices at which CCC holdings could be sold were broadly defined.

Before Titles II and III of the 1948 Act could come into effect the Agricultural Act of 1949, containing certain important amendments, was passed:

(i) The principle of flexible support levels was retained but the range of price support was changed and established at 75-90 per cent of parity on expected supplies ranging from 130 per cent of normal down to 102 per cent.

(ii) Normal supply was redefined to include a carry-over of 10 per cent rather than 7 per cent of domestic consumption plus exports. This automatically raised the level at which acreage allotments and marketing quotas would have to be imposed, and it also raised the applicable level of support prices for a given volume of supply.

(iii) The parity index was redefined to include wages paid to hired farm labour. This raised the level of the parity index and thus of parity prices.

(iv) The use of transitional parity prices was postponed until January 1956. In the meantime the parity prices for basic commodities could not be less than the parity price computed by the procedure used prior to January 1, 1950. This meant that during that period the new parity prices could be used only if it would result in higher parity prices.

(v) CCC stocks of corn could not be sold at prices less than 5 per cent above the current support price plus reasonable carrying charges-- except when sold for by-product uses, or because of quality deterioration, or when sold for export.

Acreage allotments for corn were in effect for the 1950 crop and again in 1954 and 1955, while CCC-loans were available to farmers in every year.

b. The Agricultural Act of 1954: The Act introduced the following changes in the program for corn:

(1) Compliance with acreage allotments was still required in order to be eligible for support, but the provisions for marketing quotas were revoked.

(2) The definition of normal supply now provided for a carry-over of 15 per cent instead of 10 per cent of domestic consumption and exports.

(3) The Act also provided that the support price of corn and other basic commodities at the mandatory level of 90 per cent of parity would be terminated, and flexible price floors ranging from 75-90 per cent were announced for the seasons following.

In Title I of the Agricultural Trade Development and Assistance Act (Public Law 480) the CCC was authorized to sell surplus agricultural commodities for foreign currency to friendly nations. Title II of the Act authorized the transfer of CCC-owned surplus stocks on a grant basis to friendly nations, provided it does not interfere with commercial sales that might otherwise be made. It

was expected that these measures would stimulate the export of surplus corn stocks.

c. The Soil Bank Program 1956: In 1956 a significant supplementary measure was introduced: the Soil Bank Program. It consisted of two parts:

(1) A temporary program, the Acreage Reserve, which provided for payments to producers of the basic commodities on land taken out of production for a few years.

(2) A long-term program, the Conservation Reserve, which provided for government assistance to all producers willing to carry out plans for the conservation and rehabilitation of their farm resources.

The important role visualized for the Soil Bank Program is expressed in the following statement:

"Widespread participation in the Soil Bank will promote stability in American agriculture They (farmers) will receive substantial aid in solving the surplus problem, one of the most serious facing American agriculture today."²³

Farmers apparently did not share the same enthusiasm and the acreage reserve program especially met with much opposition in the Corn Belt. Corn farmers wishing to enter into the program had to reduce their acreage substantially in order to come within their

²³The Soil Bank Program (U.S.D.A. Office of Information, Sept. 1956), p.1.

allotments for example, by as much as 36 per cent in Indiana. The result was limited participation during 1956 and 1957.²⁴

As a result of this development and also because of other unsatisfactory aspects of the program's application and administration, the House of Representatives voted in May 1957 against extending the acreage reserve program beyond that year. The major emphasis now rests with the conservation reserve and with the hope that lower price supports will discourage production. The future programs, if any, are far from clear.

d. The Agricultural Act of 1958: The Act provided for corn producers to choose by referendum between discontinuing acreage allotments and receiving support at 90 per cent of the average price in the previous three seasons (but not less than 65 per cent of parity) or continuing the existing acreage allotment program with supports at 75-90 per cent of parity.²⁵ Corn growers voted strongly in favour of the former.²⁶

In terms of the new program the traditional distinction between the commercial and non-commercial corn areas fell away, and

²⁴Bottum, J.C., "The Soil Bank as a Solution to the Farm Price and Income Problem", Policy for Commercial Agriculture, p.709.

²⁵The Corn Referendum, U.S.D.A., Washington, October, 1958.

²⁶U.S.D.A. Press release 12-59, Washington, January, 5th, 1959.

with that also the differential rates applicable to farmers inside and outside the commercial corn area.

The program has just gone into operation and it is too soon to judge to what extent it will help to solve the problem of increasing surpluses and increasing program costs to the Treasury. The discussion and evaluation of corn programs in Chapter V will, therefore, not include the new program.

CHAPTER V.

CRITICAL ANALYSIS AND EVALUATION OF U.S. PROGRAMS FOR CORN.

Introduction:

When comprehensive government programs for agriculture were discussed during the late twenties and the thirties, most of the emphasis was placed upon cyclical disturbances associated with fluctuations in consumer demand and weather conditions. It was argued that with a generally inelastic demand for agricultural products while supply is inelastic in the short-run, relatively small shifts in demand had large price-and income-effects. The same applies to shifts in the supply curve due to abnormal weather conditions.

A complicating factor was the ability of industry to maintain prices during times of depression by reducing output more effectively. This turned the terms of trade between industry and agriculture in favour of the former. Although the reverse was true during periods of prosperity, the case for agricultural stabilization and support programs at that time rested upon the belief that farmers suffered more during a contractionary period than they gained during periods of expansion. Furthermore, even if the effects cancelled out over the length of the cycle, the very fact that wide fluctuations occurred created additional risk and uncertainty which, in turn, reduced efficiency and placed agriculture at a competitive disadvantage.

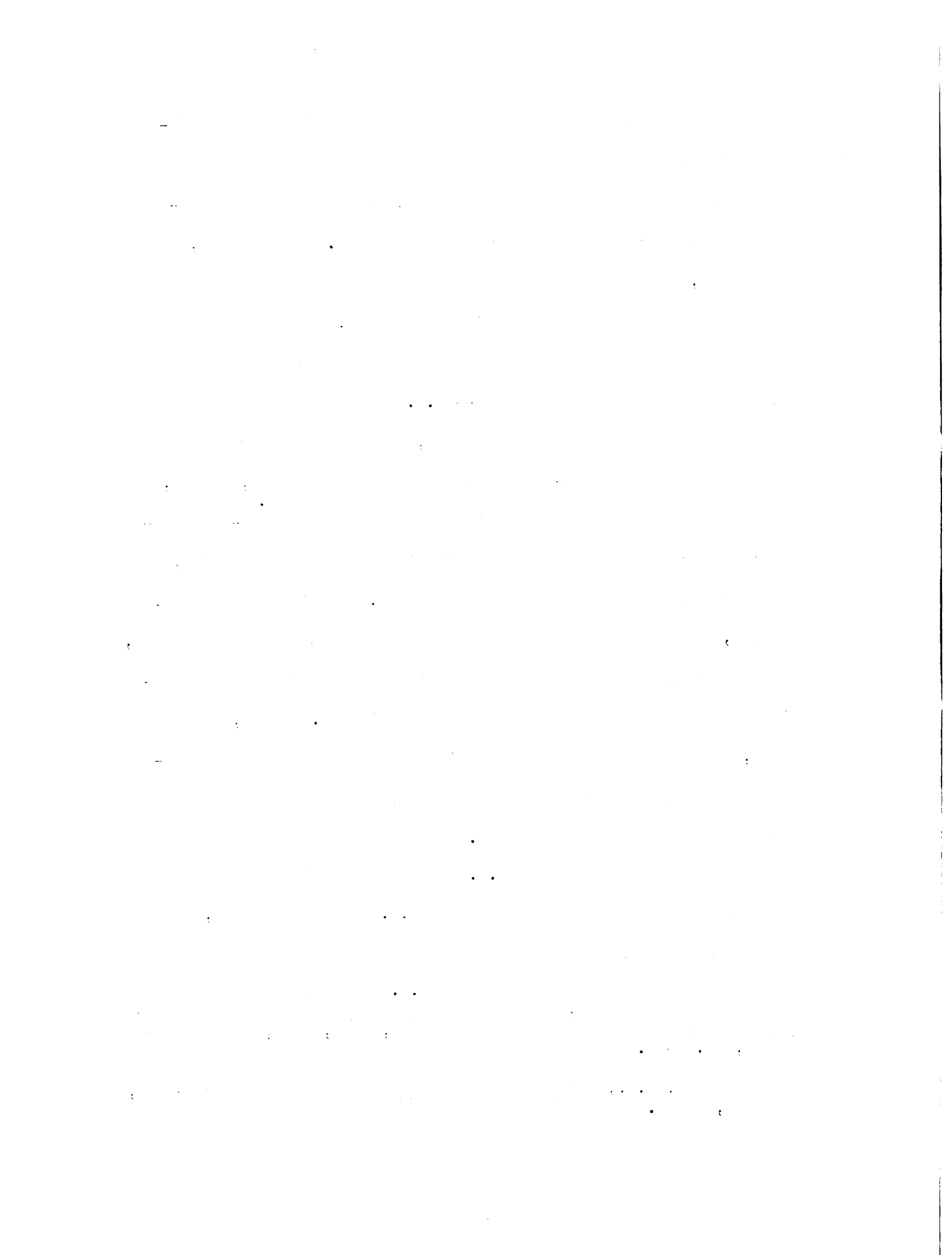
The experience of the early thirties stimulated new interest in the apparent inability of agricultural production to contract sufficiently during depressions, even when these conditions endure for periods of more than two years. Since 1945, in particular, there have appeared a number of important contributions in the field of supply response in agriculture.¹

The irreversibility of supply in agriculture seems to have been well established by now-- i.e. that supply is relatively elastic in response to price increases, moving upward more or less along the path of a long-run function; when prices fall, though, supply movements downward approximate the path of a short-run function; the result is a very sharp drop in the equilibrium price, with a relatively small reduction in output. It is not so clear, however, as to whether these actions stem from technological changes, from imperfections in the market for fixed assets or from some combination of both this factor and other conditions. Thus, in later years, the perennial problem of agricultural surpluses and its depressing effects on prices and incomes have been discussed more in terms of structural maladjustment.

As far back as 1945 T.W. Schultz² emphasized the secular tendency of agricultural supply in the U.S. to exceed demand, and

¹For a brief survey of these see G.L. Johnson, "Supply Function-- Some Facts and Notions", Agricultural Adjustment Problems in a Growing Economy, (The Iowa State College Press, Ames, Iowa, 1958) footnote 1, pp.74-76.

²Schultz, T.W., Agriculture in an Unstable Economy (McGraw-Hill, New York, 1945).



pointed out the dangerous consequences it may have for commodities with low income-elasticities of demand. He also pointed out that for a more balanced agricultural industry there would have to be an increased outflow of human labour from agriculture, with more capital flowing in. More recent statistical investigations indicate that this statement remains true even for the present time, with the difference that the forecasted surpluses already exist today.³

It is clear from the description in the previous chapter that the way in which government programs sought to improve the income position of corn producers consisted mainly of two approaches:

(1) The CCC supported open market prices through a storage program by entering into loan and purchase agreements with producers.

(2) In order to prevent the accumulation of storage surpluses at such levels as would destroy the whole program, the supply should be kept within reasonable limits. Until 1954 acreage allotments and/or marketing quotas could be used, but each time control was deemed necessary only acreage allotments were used. In 1954 the provisions for marketing quotas were cancelled.

The question arises as to what theoretical justification existed for employing these methods, and to what extent practical considerations played any important role in the selection thereof.

³Refer to the papers published in Section II ("The Current and Prospective Position of Agriculture") of Policy for Commercial Agriculture, pp.77-169.

Theoretical Foundations and practical Considerations involved in the Main Measures:

Inelasticity of demand: The most important theoretical principle involved was the nature of the relationship between price elasticity of demand and total returns from different volumes of output.⁴ This can be stated as follows: The change in total revenue associated with a small reduction in quantity will be positive, zero, or negative depending on whether the price elasticity of demand is numerically less than unity, equal to unity, or greater than unity.

It must be emphasized that in order to raise total returns a mere increase in price as the result of a reduction in quantity sold, is not sufficient; marginal revenue from a small increase in price must be positive for the industry. Yet it seems many people thought at the time that total returns would increase for any rise in price.⁵

There was evidence available to support the belief that the price elasticity of demand was less than unity. Peterson found that

⁴If price elasticity of demand is defined as $\eta = \frac{p}{q} \cdot \frac{\Delta q}{\Delta p}$ it can be shown that Marginal Revenue = $p(1 + \frac{1}{\eta})$, where q = quantity, p = price, Δq = infinitesimal change in quantity, and Δp = infinitesimal change in price - see Stigler, G.J., The Theory of Price (MacMillan Co., New York, 1953), pp.37-38 for a geometrical proof.

⁵Refer, for example, to repeated warnings by G.F. Warren op. cit. and O.B. Jesness op. cit. against this misunderstanding.



large crops yielded smaller total returns than small crops, and that, with normal acreage of corn, yields 10 per cent below normal would have the largest total value.⁶

Henry Schultz published quantitative estimates of demand elasticities for various agricultural products over different periods of time and using different formulas.⁷ The median figure for the elasticities of demand for corn with respect to wholesale prices, for instance, was $-.71$, thus less than unitary elasticity.⁸

The statistical verification of this rather crucial assumption about the nature of the demand elasticity for corn, suggests that a policy aimed at reducing supply could be expected to benefit farmers in the short-run. The long-run effect is less certain because cross-elasticities of both demand and supply would be important.

Price stabilization through storage-programs: Another important theoretical proposition was that under conditions of relatively steady demand and fluctuating supply storage operations to stabilize prices would increase total returns to producers. In 1929 Ezekiel

⁶Peterson, G.M., "The Relation of Annual Weather Surpluses to Net Farm Incomes", The Annals, March, 1929 (CXLII) pp.391-401.

⁷Schultz, H., The Theory and Measurement of Demand, (The University of Chicago Press, Chicago, 1938).

⁸Tinbergen, J., Econometrics (The Blakiston Co., Philadelphia, 1951), p.101.

published the results of a statistical investigation in this field.⁹ It was demonstrated that only if the total-returns curve (or value-supply curve) was concave downward (or convex) over the range of expected supply, would it pay to stabilize prices by means of a year-to-year storage program.¹⁰

There were further advantages associated with stable prices. It was generally believed that the attending reduction in uncertainty would enable producers to use available resources more efficiently.¹¹ For example, it was argued that reduced price risks would reduce the degree of capital rationing (external as well as internal rationing) and thus permit increased use of a scarce resource. Increased efficiency is, of course, an instrumental goal and producers as well as the rest of society stand to gain from it.

Another important aspect was that a storage program would lead to a more stable supply, which would be an advantage to the livestock industry. A quantitative study dealing with the possible effect of feed grain storage was published by Shepherd in 1949. The results indicate that both corn producers and hog producers

⁹Ezekiel, M.A., "A Statistical Examination of the Problem of Handling Annual Surpluses of Non-perishable Farm Products", Journal of Farm Economics, Vol. XI, No. 2, Part II, 1929.

¹⁰For a very clear discussion of this point, see: Thomsen, F.L. and Foote, R.J., Agricultural Prices, (McGraw-Hill Book Co. Inc., New York, 1952), pp.212-216.

¹¹For a discussion see Johnson, D.G., op. cit., pp.38-71 and 87-107.

would benefit from such a program.¹² It should be observed that one of the assumptions was that supply and demand are more or less in balance over a 2- or 3-year period.

The latter condition is of major importance. Although it was recognized by some, there are indications that many looked upon storage programs as an important means to increase farm prices. Storage programs cannot raise long-run price levels, ceteris paribus. What is put into storage must eventually be released and the respective effects on prices would tend to offset each other partially if not completely. Only if the initial removal is of a permanent nature could it lead to major increases in price levels.¹³ However, this is not to deny that a storage program could be used successfully to provide some stability in the industry while fundamental adjustments in supply are effected.

The policy implications are clear: If supply regularly exceeds demand, or if surpluses usually are large but deficits small, any storage program will have to be supplemented with a vigorous surplus disposal program.

An important practical consideration in the use of storage loans was that it would provide the producer in financial need with a source of credit on terms that would hardly be offered by commer-

¹²Shepherd, G., "Objectives, Effects, and Costs of Feed Grain Storage", Journal of Farm Economics, Vol. XXXI, No. 4, 1949, pp. 998-1004.

¹³Thomsen, F.L., and Foote, R.J.,: op. cit., p.215.

cial credit agencies. At the same time it achieves the main objective of preventing excessive supplies from ruining prices in the market.

It should be pointed out that if prices are stabilized while output fluctuates, this could increase instability of income from year to year.

Effective control of production: The success of a program to improve incomes and to raise and stabilize prices by exercising monopoly power requires effective control of supply. It is generally agreed today that acreage controls without marketing quotas are poor instruments for achieving this objective.¹⁴ Why, then, were marketing quotas not selected in the place of, or in conjunction with, acreage allotments?

For marketing quotas to be really effective they have to be administered through market channels. The major proportion of corn grown is consumed on the farm (particularly in feeding hogs) and thus never enters the market proper. Effective marketing quotas thus would have to take account of hog numbers and weights and other feed uses.

A study of the literature cited in Chapter IV on the history of corn programs suggests that the assumption that acreage allotments could be used with a reasonable degree of success was based on the following:

¹⁴Report of the Subcommittee on Agricultural Policy to the Joint Economic Committee of Congress, Government Printing Office, Washington, 1958, p.14.

(1) At the onset of the program in the early thirties it was thought that it would be a temporary program. It was reasonable to expect over the short-run, and under conditions of low prices, that when price support is tied to compliance with allotments, enough producers would co-operate to reduce the actual acreage planted in the commercial corn areas.

(2) It was also thought that for the short-run a reduction in acreage would mean a proportional reduction in total output--given normal growing conditions. Even in the very short-run this can be expected only if the acres taken out of production have the same yield potential in general as the acres still being cultivated. It is a naive assumption, yet this is what it amounts to if normal yields are used to determine the total allotment needed for a normal supply.

(3) Furthermore, it was implicitly assumed that no significant change in technology would take place. However, at the time this was an unfortunate assumption even for the short-run. The use of new hybrid seed corn was spreading through the Corn Belt very rapidly (1935-40) bringing yield increases of 10-15 per cent.

(4) One of the most restrictive assumptions necessary to make acreage allotments effective is that very little substitution of other resources for land would take place. Again, what little effect this may have will be limited in the short-run, but even during a depression it can hardly be regarded as realistic.

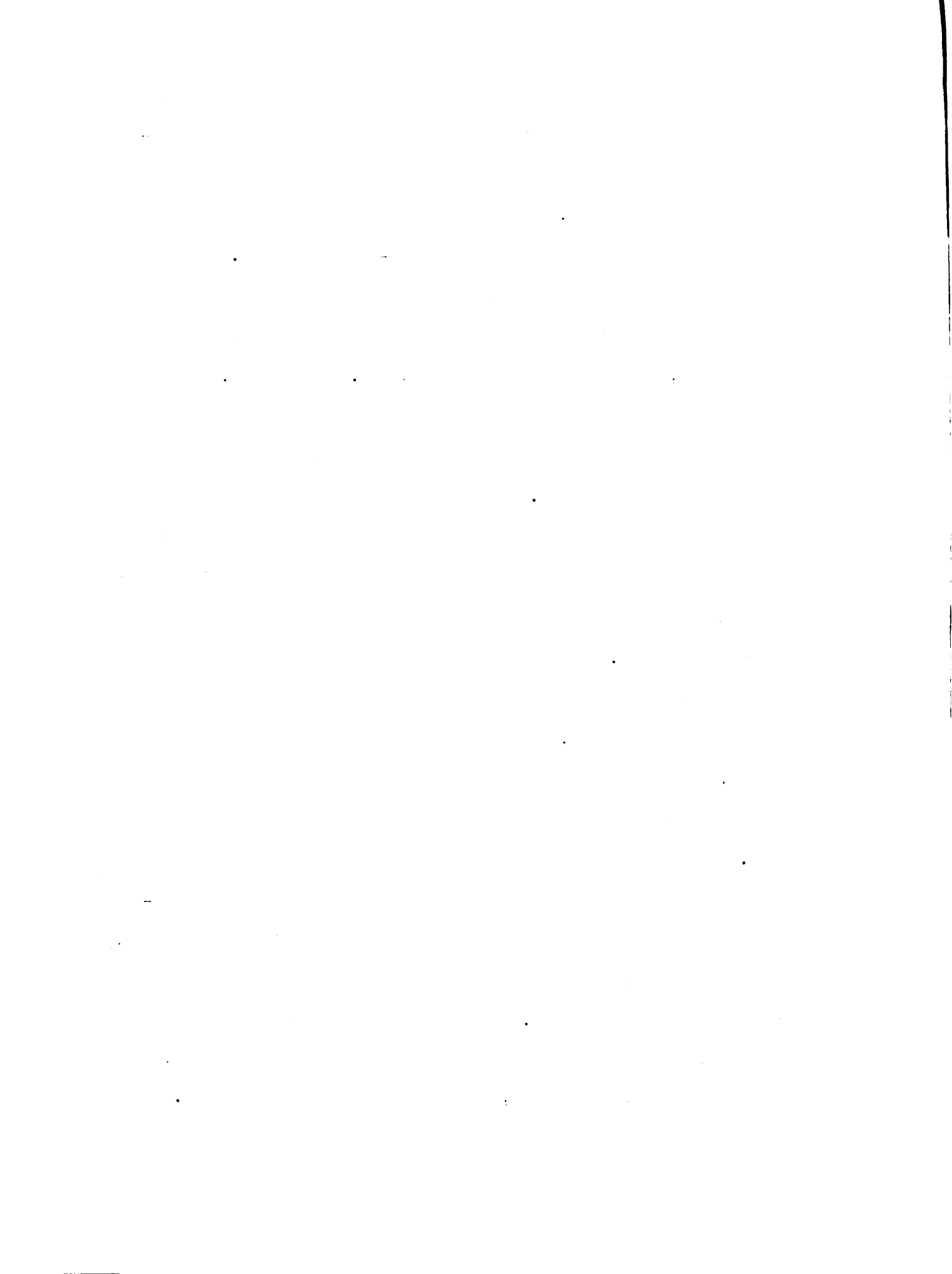
(5) A related assumption was that farmers would not produce substitute feed crops on acres transferred from corn or wheat under a control program. Such substitution would have the effect of maintaining total feed supplies at pre-control levels.

While it appears that many people did believe that the adjustments were this simple there were others who believed that substitution, technological adjustments, etc. would occur. These could be offset by somewhat larger acreage cuts; even they did not recognize the quantitative size of the adjustments and counteractions possible at the farm level.

Allotments were applied only in the commercial corn areas so that there always existed the danger that acreage reduction under an allotment plan could be offset by an expansion of acreage outside the regulated area.

Even in the commercial corn areas there was no penalty for exceeding the allotment, except the loss of eligibility for price support. Only under very severe economic conditions would there be some reason to expect large scale and loyal support of these arrangements.

It is true that the total acreage allotment could be reduced to reflect productive efficiency and technological advance etc., but this would involve some time lag before these tendencies could be properly taken into account. In this respect there is also a very strong political factor involved and drastic acreage reductions, even though economically justified, could be politically unfeasible.



The extent to which intensified cultivation of reduced corn acreage and diversion of idle acres into production of substitute feed crops endangered successful adjustments between supply and demand was clearly indicated by an empirical study published in 1942.¹⁵ With most of the feeding taking place on the farm where the feed is grown, substitution of other feeds for corn would result in a reduction in supply of corn being offset by a reduction in corn utilization (or demand), thus no change in the net position.

Parity prices: As indicated in the previous chapter, much reliance was placed on the use of parity prices to promote income and efficiency goals.

Returns to farmers consist of two components: price and quantity. Parity prices in themselves do not take account of changes in output; thus they do not reflect gross income to farmers with any degree of accuracy. And even then, it is perhaps net income, not gross income, that should be given attention. Similarly the Parity Index does not reflect total costs but only the prices paid per unit of factor. Although it is a weighted index of farmers' expenditures it does not reflect the changes that occurred in the "factor-mix" since the base period; neither does it distinguish pure price increases from price increases due to qualitative improvement in the factor (commodity) purchased.

¹⁵Schultz, T.W., and O.H. Brownlee, "Effects of Crop Acreage Control Features of AAA on Feed Production in 11 Midwest States", Iowa State College Research Bulletin, No. 298, Ames, Iowa, 1942.

Furthermore, there was no reason to assume that relative prices would remain in the same proportion for the different products as they were in the base-period, 1910-1914. Yet until 1949 that was implied in the continued use of the old formula. The revised parity formula, although overdue, still was prevented from coming into operation before 1955.

Although support prices should not be confused with parity prices, there is a definite connection. Much has been made of the theoretical proposition that flexible levels of support could be used to encourage farmers in adjusting supply to the conditions of demand. This arrangement was also temporarily deferred after World War II. A major objective of Secretary of Agriculture, Ezra Benson, has been to re-instate flexible supports and reduce them to levels which may affect future supply.

As a result of the high level of support, the support price for corn exceeded average market price in most of the years since 1948. This, together with the postponement of the use of "modernized" parity, has perhaps contributed to the fact that CCC-stocks of corn showed a tendency to rise during most of the years since 1950.

Alternative Support Programs:

Two alternative methods of support will be briefly considered here. One is the method of direct or deficiency payments which is perhaps better known in the form of the Brannan plan.¹⁶

¹⁶The proposal was put forward in 1949 by the then Secretary of Agriculture, Mr. Charles Brannan.

The other is a more recent proposal by W.W. Cochrane and others, based on marketing quotas. The first type of program intends doing away with production and marketing controls, thus moving away from the current restrictive practices, while the other method attempts to force an adjustment in supply by making controls far more extensive and rigid than at present.

The direct-payment approach: This method is normally understood to mean that the total quantity producers wish to dispose of would be sold for what it would bring in the market place, with the difference between the actual market price and some official support level of price being made good through direct payments to producers.

In terms of the Brannan plan direct payments were to be used mainly in respect of perishable commodities while storable commodities were to be supported by means of a loan-storage program. Technically speaking, however, the method could be applied equally to non-perishable commodities - as witnessed by the present program for wool in the United States.¹⁷

The chief advantages claimed for this kind of program are:¹⁸

(1) It would lead to increased consumption, since market prices would be forced down as the total supply is sold in the market. Consumers would benefit from the abundant supplies.

¹⁷Price programs, Agricultural Information Bulletin No. 135, United States Department of Agriculture, Washington D.C. 1957, p.10.

¹⁸Hamilton, W.E., "Direct payments to Farmers are not the Answer", Policy for Commercial Agriculture, p. 672; also refer to Trends in International Trade, Report by a Panel of Experts, GATT, Geneva, 1958, pp.97-106.

(2) It would not disrupt foreign markets, and would make it easier for surpluses to flow into export outlets.

(3) It would, consequently, eliminate costly storage programs.

(4) It would permit the stabilization of farm income without regimenting farmers.

(5) It would be possible to limit the actual cash benefits of individual farmers to some predetermined maximum figure.

There are, however, certain limitations and disadvantages to such a program:

(1) Unless the support price is permitted to fluctuate in accordance with the size of the crop, direct payments would not be more effective than ordinary price support measures in bringing about an adjustment in resource allocation. Over-production would still be present if support levels were set too high, whether a price-support or direct-payments system was being followed would not make a real difference.¹⁹

(2) Since consumers would be paying lower prices under a direct-payments system it would require higher taxes to raise the money needed to make compensatory payments to producers. Such a system might make a heavy demand on the budget of a country, particularly a surplus producing country where the eligible commodities represent an important proportion of agricultural production. This

¹⁹Black, J.D., "Observations on Direct Payments and the Commodity-by-Commodity approach to the Farm Problem", Policy for Commercial Agriculture, pp.656-659.

might have unfavourable political consequences. The cost to the Treasury will be directly affected by the elasticity of demand. If demand is elastic direct payments would be a cheaper method than a purchase-and-storage program. If demand is inelastic the opposite would be true.²⁰

(3) If direct payments result in raising the prices received by the domestic producer above the world level of prices, it could be construed as a subsidy on exports and could give rise to countermeasures from importing countries as well as competing exporting countries. In the long-run it might have the same undesirable effect upon foreign trade as a purchase-and-storage program with too high support levels.²¹

Cochrane's proposal for supply control:²² The history of current and past purchase-and-storage programs coupled with production controls, with one or two exceptions, is not encouraging. The method to be briefly outlined below represents a proposal aimed at achieving the following goals: "firstly, to contract aggregate output in the short-run; secondly, to effect a rate of output expansion, commodity by commodity, consistent with demand expansion in the long

²⁰Samuelson, P.A. Economics, (McGraw-Hill Book Co. Inc., New York, 3rd ed., 1955), pp.404-406.

²¹Hamilton, W.E., "Direct Payments to Farmers are not the Answer", Policy for Commercial Agriculture, pp.679-680.

²²Cochrane, W.W., "Some Further Reflections on Supply Control", Journal of Farm Economics, Vol. XLI, No. 4, 1959, pp.697-717.

run; and thirdly, to achieve rates of return to capital and labour employed in agriculture roughly comparable to those in the non-farm sector."²³ The fundamental principles upon which such a system of supply control in agriculture would rest are the following:²⁴

(1) Fair or parity prices for each commodity involved would be determined by Congress. The basis for setting these prices would be such as to yield fair returns to labour and capital on representative farms under average management.

(2) The Department of Agriculture would set national sales quotas on each commodity approved by producers in referendum. The national sales quota for a commodity would be equal to the estimated quantity that would clear the market at the predetermined fair price.

(3) Each farmer would receive his pro rata share of the national quota for each commodity, based on his historical record of production. It would be illegal for a farmer to market any commodity which is subject to a national quota except to the extent of the quantity covered by his personal quota (represented by marketing certificates). Year to year adjustments in the national sales quota would be effected not by changing the number of certificates, but by announcing what percentage of the face value of the certificates would be effective.

²³Ibid. (p.717).

²⁴Ibid. (pp.699-700).

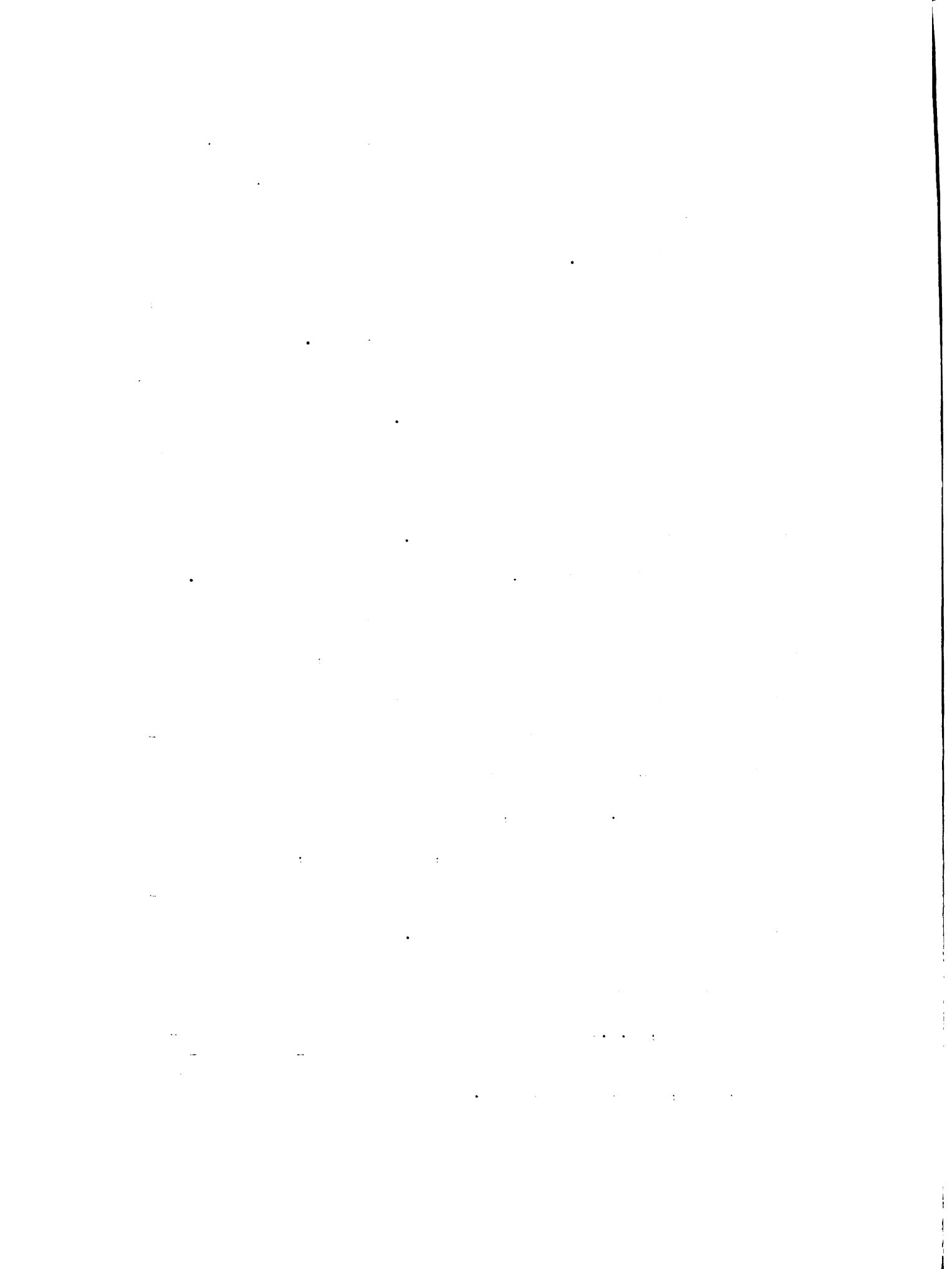
(4) Each marketing certificate would be negotiable, so as to ensure freedom of entry and exit within the industry. The price of these certificates would become "the cost of doing business in a stabilized agriculture". Individual producers would be able to adjust their own production through buying or selling certificates, thus there would be flexibility at the micro-level.

Within such a framework a specific program for each commodity involved would have to be worked out. It is visualized that national sales quotas would not be established for commodities which are mainly consumed on the farm and corn would therefore be excluded from such a program in the United States. The controls would be placed upon the final product, such as meat and dairy products.

While such a system of comprehensive supply control may be capable of adjusting total supply to total demand, the following factors make its adoption rather unlikely:²⁵

(1) Indications are that the required total income transfer from the non-farm to the farm sector would be as large as under the present program. However, the incidence of the burden would shift towards the lower income groups, as consumers, and the method would therefore be more regressive than financing Treasury expenditures by way of a progressive income tax.

²⁵Hathaway, D.E., "Potentialities and Limitations of Comprehensive Supply Control: An Independent viewpoint" - paper presented at the Annual Meeting of the American Farm Economic Association, Ames, Iowa, August, 1960.



(2) The distribution of income within agriculture would not change and lower income farmers would gain relatively little from such an arrangement.

(3) Since the aforementioned observations point to a situation where lower income consumers would subsidize mainly the higher income farmers, the political acceptability of comprehensive supply control seems small.

(4) Chances are that an effective comprehensive supply control program would increase the threat of long run inflation. The current structure of the United States' economy and its propensity to transmit price rises indicate that higher farm and food prices would trigger undesirable inflationary forces. Farmers would therefore derive little real gain from their increased money incomes.

Although it is likely that farmers would be better equipped to at least maintain the status quo in their income position vis-a-vis the non-farm public, the question arises whether this is the least costly way in which such a result can be achieved.

From the above discussion it appears that neither of the two alternatives represent a program clearly superior to the present program. In the first case the dangers of too high support levels and ineffective supply controls which characterize the actual program are also present. In the second case the price effects accompanying effective supply controls would seem to raise serious economic and political objections.

Evaluation:

With stocks of most supported crops at very high levels, and still rising, including corn at 1,530 million bushels on October 1, 1959, it is not surprising to find all types of criticism being levelled at the U.S.D.A., Congress, and whoever in the past may have had a hand in programs to support agriculture. An example is the bold headline: "Farm Policy - A Study in Failure."²⁶ Before throwing out the whole set of measures it may be well to attempt some evaluation of the corn programs:

Acreage control: There seems to be general agreement that acreage control did not have any significant effect.²⁷

The secretary for Agriculture stated earlier: "... A technological explosion is occurring on American farms These changes make it virtually impossible to curtail agricultural output with the type of controls acceptable in our society"²⁸ This condition is borne out by the statistical evidence contained in papers submitted by panelists appearing before the subcommittee on agricultural policy of the Joint Economic Committee.²⁹

²⁶First National City Bank Monthly Letter, New York, June 1957, p.66.

²⁷In the corn referendum of 1958 corn farmers voted in favour of program 1, which proposed freedom over acreage planted but with minimum support levels reduced to 65 per cent of the parity price.

²⁸Speech before the National Cottonseed Products Associations, Washington, D.C. on May 21, 1957.

²⁹Such as those by T.W. Schultz, G.T. Barton, and others published in Policy for Commercial Agriculture.

Table 43 compares total acreage allotment, in those years for which allotments were in effect, with total acreage planted. It clearly indicates the importance of the "uncontrolled acreage".

Table 43. Acreage allotments in commercial corn areas and total acreage planted (million acres).

	Acreage Allotment	Total Acreage planted
1950	46	83
1954	47	82
1955	50	81
1956	43	78
1957	37	73
1958	39	73

- Sources: (1) The Feed Situation, Agricultural Marketing Service, Washington, D.C., various issues.
- (2) Foreign Agriculture Circular, U.S.D.A., Washington, D.C., July, 1960.

O.C. Stine³⁰ in his paper submitted to the above mentioned subcommittee concluded that, contrary to what could be expected, the record does not indicate significant shifts in acreage from the Corn Belt Area to the outside areas as a result of allotments; neither does it show significant shifts, in total, from corn to other feed grains.

³⁰Ibid., pp.689-700.

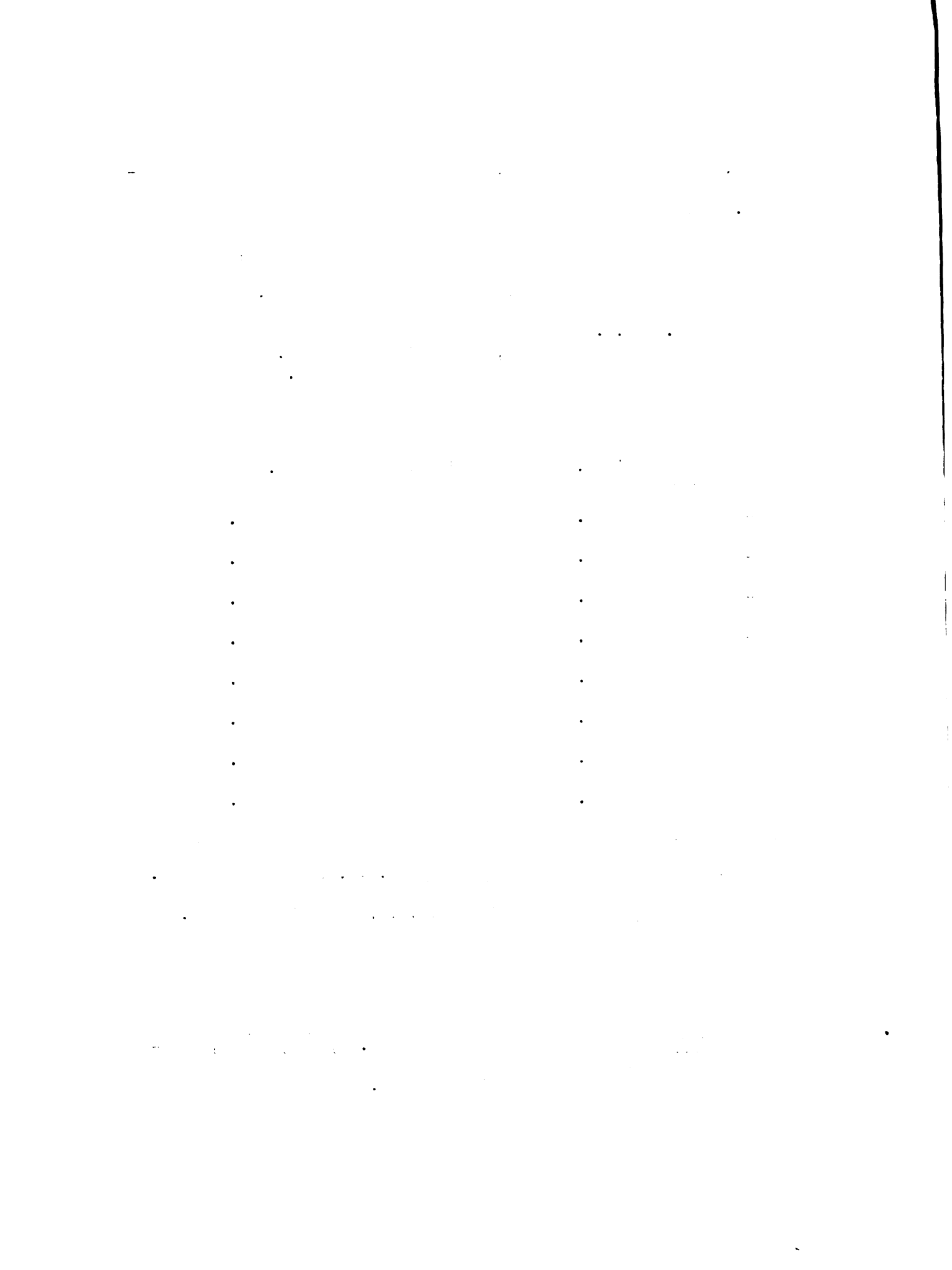
He also points out that the very significant increase in yields, indicated in Table 44, was not the result of acreage allotments. Average yields outside the commercial corn areas increased in proportion to yields where allotments were in effect, and were thus due to an overall improvement of farm technology.³¹

Table 44. U.S. corn production statistics: Average acreage, production and yield. (Production for all purposes).

Period	Acreage ('000,000)	Production ('000,000)	Yield (Bu. per acre)
1936-1940	90.8	2347	25.9
1941-1945	89.3	2929	32.8
1946-1950	84.5	3098	36.6
1951-1955	80.4	3143	39.1
1956	78.2	3455	44.2
1957	72.6	3422	47.1
1958	73.3	3801	51.8
1959	84.6	4361	51.5

Sources: (1) Agricultural Statistics (U.S.D.A.) various issues.
 (2) The Feed Situation (U.S.D.A.) - various issues.

³¹ Figures quoted in The International Effects of National Grain Policies (Commodity Policy Studies No. 8, FAO, 1955), indicate that the increase in yield per acre was responsible for 40 per cent of the increase in grain supplies.



These conclusions suggest that at best acreage control might have reduced production below what it otherwise would have been. This however gets into difficulties with respect to the hypothetical rates of technological advance in such circumstances.

Storage-loan program: The storage-loan program has been credited with the following:³²

(1) Loans provided farmers with cash at an early stage during the marketing season, when forced sales in a seasonally depressed market would have been harmful.

The non-recourse clause (that is, a borrower may turn over to the CCC the collateral put up against the loan instead of repaying the loan), permitted farmers additional time to decide about the final utilization of their crops and thus added some flexibility regarding feeding activities.

(2) The storage program contributed much to the stability of feed supplies, thereby aiding the livestock industry. It has been estimated by the U.S.D.A. that, during the 12-15 years preceding 1952, "the storage program reduced the earlier variability of corn consumption by livestock as much as 50 per cent."³³

It was calculated that net CCC removals during 1956, for example, amounted to as much as 354.5 million bushels.³⁴ The

³²Benedict, M.R., and O.C. Stine, op. cit., pp.230-231.

³³Cited by Benedict, M.R., and O.C. Stine, op. cit., p.232.

³⁴Stollsteimer, J.F., Effects of Government Loan and Purchase Programs upon Domestic market supplies of Farm products in the Post-war Period, unpublished M.S.-thesis, Michigan State University, 1958.

important task performed by the CCC in the storing of annual surpluses is reflected by the fact that since 1951 (with the exception of 1959), it carried upward of 40 per cent of the October 1, total stocks of corn (Table 45).

Table 45. Distribution of October 1 stocks in U.S. and percentage of crop placed under price support (million bushels) 1950-1959.

Year	Stocks held by CCC ^{*E}	Total U.S. stocks	CCC stocks as % of total
1950	253	844	30.0
1951	315	740	42.6
1952	245	487	50.3
1953	384	769	49.9
1954	468	920	50.9
1955	560	1035	54.1
1956	560	1165	48.1
1957	573	1420	40.4
1958	612	1468	41.7
1959	565	1530	36.9

^{*E}In bins or other storage owned or controlled by CCC, therefore it does not include all government stocks.

Sources: (1) Feed Situation, various issues.

(2) Grain Stocks in all positions, U.S.D.A. Press Release, June 1960.

Floor prices: The stabilization plan to establish a floor price has been a definite aid to producers in that it reduced price uncertainty. This enabled producers to make better use of technological advances, and as a mixed blessing, contributed to the rapid growth of production potential.³⁵

Parity formula: A major criticism of these programs is that the extended use of the unrevised parity formula in computing the parity price for corn, and thus also the support prices, led to prolonged distortion of agricultural price relationships. Corn, wheat and potatoes especially were overpriced relative to livestock and dairy products.³⁶

From 1950 onward the new formula would have reduced the parity price for corn by about 15 per cent.³⁷ Even though the new formula, which yielded higher parity prices for livestock, was used for livestock, the readjustment gap was less than what it would have been if corn parity and support prices were permitted to drop.³⁸ If the new formula had been used for corn this could have had an important corrective effect on demand-supply relations in the corn market.

³⁵Refer Paarlberg D., "Shortcomings in Current Explanations of National Farm Surpluses", Journal of Farm Economics, Vol. XXXVIII No. 5, Dec. 1956, pp.1708-1716.

³⁶Wells, O.V., "Parity Prices and Parity Income Formulas, 1933-57", Policy for Commercial Agriculture, Chart 2, p.511.

³⁷Benedict, M.R. and O.C. Stine, op. cit., p.231.

³⁸In accordance with the provisions of the Agricultural Act of 1949.

A further advantage follows from the fact that price elasticity of demand is higher for meats and animal products than for corn.³⁹ An expansion of the livestock industry based on utilization of current surplus grain production has been advocated. It is argued that intensive efforts in food promotion and advertising are likely to cause an upward shift in the demand schedule for livestock products simultaneous with the shift in supply. The net result could be a more successful, yet less expensive, solution to the current problem.⁴⁰

Another harmful factor was the high percentage levels of parity at which support levels were authorized, and for some time made mandatory.⁴¹ From Table 46 it appears that the loan rate was above the national average price in most seasons from 1948.

This had a two-fold effect: stimulating supply, while discouraging demand.⁴² The result was an even larger surplus and a bigger load for the CCC to carry. (See Table 45).

The argument can be carried further: If this resulted in more CCC purchases (at higher support prices) it would involve greater

³⁹Refer inter alia The International Effects of National Grain Policies, p.20.

⁴⁰De Graff, H., "Economic Aspects of Food Advertising and Promotion," Journal of Farm Economics, December, 1955, pp.1465-1473; also his paper "The Place of Food Promotion and Advertising in Expanding Demand for Farm Products", Policy for Commercial Agriculture, pp.620-627.

⁴¹Reference is made to the fact that war-time support levels were continued long beyond World War II.

⁴²Paarlberg, D., op. cit., as well as T.W. Schultz, "Alternative Diagnosis of the Farm Problem", same issue, p.1141-2.

losses on the book value of stocks that would be sold at a later period when lower, flexible, price-supports perhaps forced down the market price.

Table 46. Price data (annual averages) for U.S. corn 1948-1958 (dollars per bushel).

Year	Parity price	National Average support level [¶]	Average prices received by farmers	Price of no. 3 yellow in Chicago.
1948	1.59	1.44	1.30	1.38
1949	1.55	1.40	1.25	1.29
1950	1.61	1.47	1.53	1.73
1951	1.75	1.57	1.66	1.83
1952	1.78	1.60	1.53	1.59
1953	1.78	1.60	1.49	1.53
1954	1.80	1.62	1.43	1.48
1955	1.81	1.58	1.34	1.24
1956	1.78	1.50	1.29	1.31
1957	1.82	1.40	1.11	1.21
1958	1.77	1.36	1.12	1.21 ^{¶¶}

[¶] To complying farmers in commercial areas.

^{¶¶} Preliminary.

- Sources: (1) Statistical Abstract of the U.S., 1957.
 (2) Commodity Yearbook, 1956.
 (3) Monthly Bulletin of Agricultural Economics and Statistics (FAO), Vol. IX, No. 7/8, August, 1960.
 (4) National Grain Policies - 1959 Supplement (FAO), Rome, 1959.

Export policy: In considering levels and means of support, the export market played almost no role. To the extent that foreign trade was considered, it was to provide means for insulating the domestic market from the world market. No one, politically or administratively, appears to have argued for a different program to avoid disturbing the relation between domestic and foreign prices.

Corn will move freely into the world market only if the domestic price is competitive with the world price. Reference to Table 46 shows that since about 1952, average national support levels were consistently higher than the average Chicago cash price - certainly not conducive to private export. From October 1952 to October 1956, for example, total U.S. stocks rose from 487 to 1165 million bushels, while annual exports fluctuated around 100 million bushel - Tables 45 and 47.

As mentioned earlier, the CCC could sell for export at a lower price than otherwise, but only limited use was made of this provision during 1953/54 when an export allowance of 15 cents per bushel was made. CCC sales for export increased from 17.1 million bushels in 1952 to 24.8 million bushels in 1953 and reached the high figure of 102.6 million bushels during the 1957/58 marketing year - this constituted 51.3 per cent of the total corn exports.⁴³

The Agricultural Trade and Assistance Act of 1954, which provided, inter alia, for export sales against local currencies

⁴³The Feed Situation, July 1954, October 1957 and October 1958.

(Title I), was expected to increase exports substantially. Although the immediate effects on corn exports were disappointing, modifications with respect to sales practices have led to increases during recent years (Table 47).

An important development was the introduction of a system of payment-in-kind subsidies for corn exports in May 1958. The program briefly operates as follows: Private exporters holding export contracts are invited by the Government to submit bids for subsidy payments; the bids normally would reflect the difference between the price realized overseas and the cost to the exporter, inclusive of his margin. The exporter is not paid in cash, however, but in CCC grain and he must give a firm undertaking to export also the quantity of grain released to him as a refund.⁴⁴ In this way the bulk of exports is taken off the commercial market and the exports are handled by private traders. CCC sales, therefore, would never indicate fully the impact of this type of subsidized exportation.⁴⁵ The effect of this arrangement is reflected in the sharp decline in corn exports under P.L. 480 and P.L. 665 (sec. 402), in actual quantities as well as percentage wise (Table 47).

Despite a significant increase in their volume corn exports still represent only a small percentage of the total production. (Table 29 Chapter II).

⁴⁴Terms and Conditions of the Feed Grain Export Program Payment in Kind, CCC Statement GR - 368, May 7, 1958.

⁴⁵According to a statement by R. Tontz, commercial corn exports of 144,633,000 bushels (71.2 per cent of total exports) were subsidized during the fiscal year 1958-59 (Hearings House Representatives, Department of Agriculture appropriation for 1961, part 2, p.282).

Table 47. U.S. exports of corn under specified government-financed programs, exports outside specified government-financed programs and total exports - fiscal years 1954/55-1958/59 (in thousand bushels).

Fiscal year	Public Law 480			P.L. 665 sec. 402	Total exports under specified government programs	Total corn exports	Exports under specified government programs as % of total
	Title I	Title II	Title III				
1954/55	-	3,274	4,382	8,647	16,303	76,378	21.3
1955/56	10,894	1,205	55,671	13,642	81,412	119,261	68.3
1956/57	13,567	1,699	47,384	15,090	77,740	140,120	55.5
1957/58	24,683	6,083	12,772	3,068	46,606	182,251	25.6
1958/59	23,273	1,661	15,244	201	40,379	203,153	19.9

Source: Foreign Agriculture Circular (FATP 16-60), U.S.D.A., June, 1960.

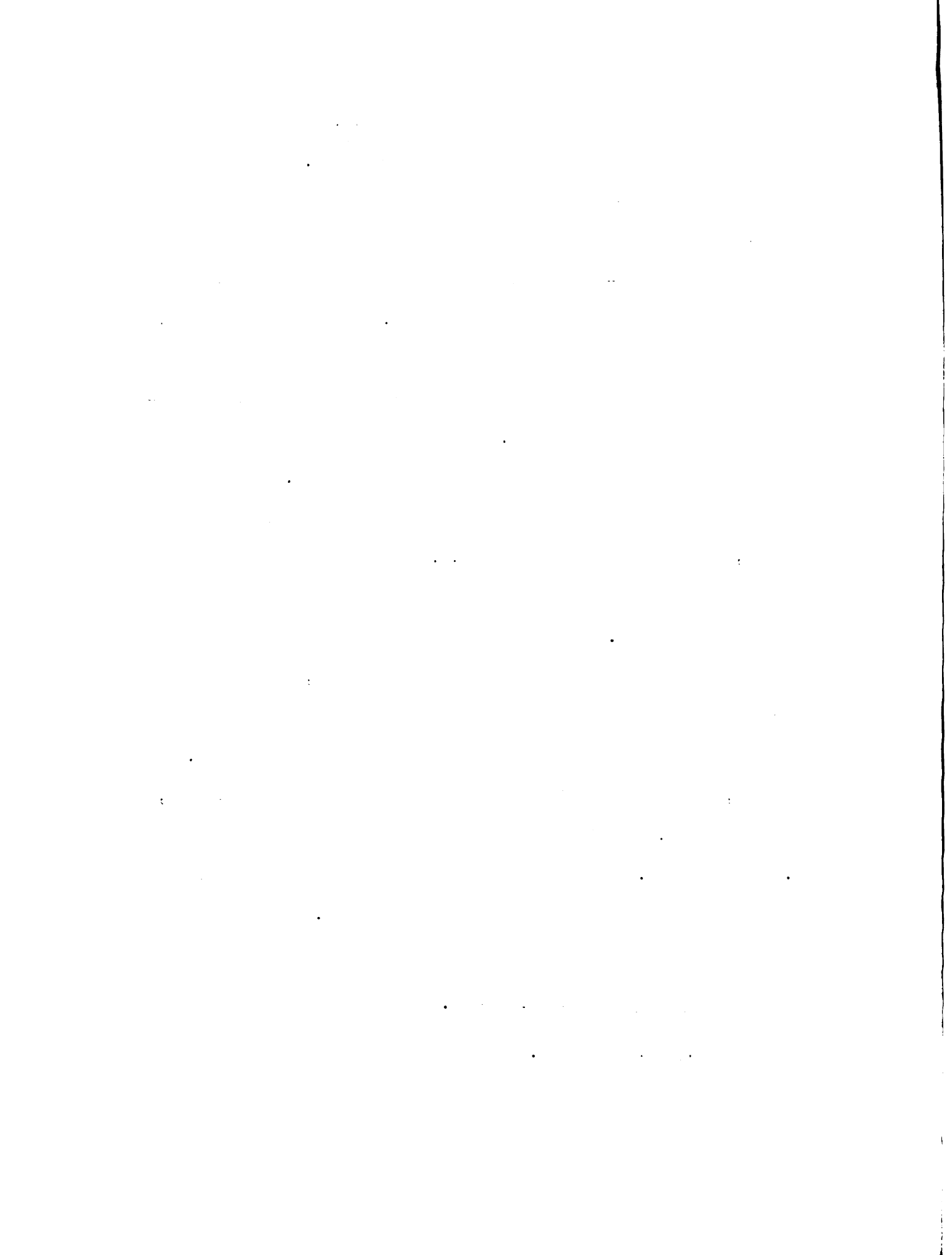
The table also indicates that the U.S. gained a strong position in the world market relative to Argentina.

The post-war measures instituted in Argentina by the Peron-regime in 1946 had had adverse effects upon corn production and the second five-year plan, announced at the end of 1952, aimed at providing a new stimulus to agriculture. Subsequent measures, such as the devaluation of the peso in 1955 and the introduction of minimum prices instead of fixed producers' prices in 1956, have resulted in increased production. The United States, however, still enjoys a clear lead as major corn exporting country.⁴⁶ It would seem that with continued downward adjustment in the level of support prices, the natural thing for the U.S. would be to encourage further efforts to increase exports and thus to remove visible surpluses from the domestic market.

Contrary to the position in South Africa, the accumulated corn stocks in the United States are too high to get rid of by simply pushing it on the world market at whatever price it will fetch. For example, closing stocks in the United States on 1st October, 1958, amounted to 36.7 million tons against a total world trade in corn of 7.1 million tons.⁴⁷ Yet increased exports would still relieve part of the pressure resulting from mounting surpluses.

⁴⁶Grain Crops, 1959, pp.179-180.

⁴⁷Ibid., pp. 68 and 76.



In attempting to expand the export market, proper consideration should be given to possible reactions in other countries - the history of increasingly protectionist international trade policies during the thirties provides a good example of what the consequences may be. Measures which may be suitable or not particularly protested when followed by a small country (in economic terms), became serious sources of tension when followed by a major trading nation and free world leader in proposals for liberal trade policies. Thus, while exports may be susceptible of increase, the process of doing so may lead to policy conflicts and dualism in programs.⁴⁸

Income effects: What have been the effects of price programs on the incomes of farmers? The fact that loan rates exceeded the national average price in many years indicates that total returns may have been higher than what it otherwise would have been. But this does not reveal much about what progress was made toward the goal of parity income for agriculture.

It would be well to keep in mind the necessity to distinguish between the functional and personal distribution of income. The functional distribution represents the relative shares of the total product which go to the factors of production; thus it depends upon the relative factor prices established on the markets.

⁴⁸For a detailed treatment of problems of this nature see Johnson, D.G., Trade and Agriculture, John Wiley & Sons, Inc., New York, 1950. Also: L.W. Witt, "Potentialities of Multiple-price Plans for Improving Agricultural Trade Relations", Policy for Commercial Agriculture, pp.585-598.

Personal distribution of income, on the other hand, is determined jointly by functional distribution and the distribution of factor-ownership among different persons.⁴⁹ In this respect, T.W. Schultz correctly pointed out that equilibrium in resource allocation does not imply that each individual and family unit will receive an income flow which meets all welfare requirements.⁵⁰

The personal distribution of income has been a major concern of government programs. Yet it would appear, as suggested by Schultz,⁵¹ that the effects of price support programs on personal incomes have been fairly regressive. If market prices are supported then producers who sell a higher volume receive more of the benefit than those who sell a small volume. For this reason government support measures for farmers' incomes which operate via market prices might lead to a more inequitable distribution of income within agriculture.

One of the strong objections raised against price support programs is that in order to support the incomes of a relatively small percentage of needy farmers, the whole industry has to be supported. "Any program designed to help agriculture is bound to produce scandalous inequities, because agriculture is not a homogeneous industry, and farmers are not a homogeneous group of people. Pro-

⁴⁹Halm, G.N., Economic Systems, Rinehart and Co., Inc. New York, 1951, p.61.

⁵⁰In a discussion of papers by F.V. Waugh and O.B. Jesness, Journal of Farm Economics, Vol. 34, 1952, pp.624-627.

⁵¹Ibid.

grams of redistribution should be designed to deal with poverty, not with agriculture".⁵²

With respect to the overall income situation of farmers, statistical investigation indicates the following:⁵³

(1) Aggregate net farm income declined by almost 25 per cent from 1947-49 to 1956.

(2) Average family income from farming for low-production farms declined at a more rapid rate than that for high-production farms.

(3) "Net farm income of farms with an annual value of sales of \$25,000 or more was fairly well maintained, while incomes of smaller operations in the high-production category showed substantial declines".

In the same study a further breakdown of average incomes on high-production farms by type and location reveals that corn belt farmers, with the exception of hog-beef raising units, enjoyed higher returns than the average for all high-production farms. Cash grain farms in this category, in particular, appear to have enjoyed a rather favourable position relative to the average for all high-production farms.

⁵²Boulding, K.E., "Does Absence of Monopoly Power in Agriculture Influence the Level of Farm Income?" Policy for Commercial Agriculture, p.50.

⁵³Koffsky, N.M., and E.W. Grove, "The Current Income Position of Commercial Farms", Policy for Commercial Agriculture, p.90.

In conclusion it can be stated that while government support programs may have prevented actual farm incomes from dropping behind non-farm incomes as fast as they would have otherwise, they appear to have worsened the position of low-income farmers.

CHAPTER VI.

A COMPARISON OF THE PROGRAMS AND RESULTS ACHIEVED IN EACH COUNTRY.

After the previous discussion and evaluation of the separate programs followed in the Union of South Africa and the United States, it is necessary to compare the methods of control before any conclusions can be drawn with respect to a future policy for South Africa. It will be useful, at the outset, to pull together the main differences and similarities that exist between the markets for corn in South Africa and the United States. After a discussion of the relative usefulness of the main measures supporting the respective programs operating in the two countries, there will be a brief examination of alternative programs, and, finally, some conclusions regarding future programs for South Africa.

Brief Comparison of the Corn Markets in South Africa and the United States:

(1) In both countries corn is a major crop, important enough in the overall picture of agriculture to warrant special attention.

(2) In the United States direct human consumption is almost negligible while livestock feeding is of tremendous importance. In South Africa human consumption is the most important form of consumption, but indications are that indirect consumption - particularly for feeding purposes - will gradually become the main form of consumption. It appears that the importance of human consumption

causes the elasticity of domestic demand in the South African market to be numerically less than in the United States market.

Since very little is known about the form of animal consumption and feeding practices at the farm level in South Africa, it is impossible to say what possibilities of substitution exist between corn and other feed grains. The cross-elasticities of demand for corn as a feed are not known.

(3) Exports are more important in proportion to the total crop in South Africa than in the United States. Current trends indicate the likelihood of continued heavy losses on exports for South Africa - rising stocks and increased export activities by the United States being important reasons for such a gloomy outlook. The situation could have been even worse, however, were it not for the restraint practised by the United States in disposing of its surpluses in the world market.

(4) Surpluses in other cereals are a very pressing problem in the United States. The wheat problem and possible changes in the wheat program, for example, have a direct and very important effect upon the rest of agriculture and particularly the feed grain sector. This is not true to the same extent in South Africa.

(5) In the United States market prices are free to fluctuate above the minimum support level which is based on a given level of parity. The minimum price is made effective through a storage and loan program carried out by the Commodity Credit Corporation.

Production controls in the form of acreage allotments operated whenever supply became excessive, although with varying effectiveness.

In South Africa the producers' price is fixed for the season, based chiefly on estimates of the cost of production. No direct production controls have been tried.

(6) There is also a difference in the method of supporting exports of corn. The current method of payments-in-kind followed in the United States is designed to encourage the movement of corn through commercial channels for export by reducing the export price below the domestic price. The cost of the program is met out of Treasury Funds.

In South Africa corn for export is sold on an open tender system to commercial exporters, any losses or gains being for account of the Corn Stabilization Fund. Producers, consumers and the Government all contribute to the Fund, but producers have contributed by far the major percentage of the monies collected up to now. Treasury funds have played a minor role in this respect.

(7) An important difference exists between the two methods of supporting agricultural incomes in the role of producers in the formulation and execution of policy decisions. In the United States a definite set of directives to the Secretary of Agriculture has been issued by Congress; Congress has retained the final say regarding support levels, etc. thus restricting the use of discretionary powers by the Secretary. The actual administration of support measures

rests largely with the Commodity Stabilization Service and the Commodity Credit Corporation - both being agencies of the Department of Agriculture. State and county agricultural stabilization and conservation committees play an important part in the administration of these programs at the local level. Producers' interest in formulating programs is represented chiefly by Congress, while the various farm organizations are also afforded an opportunity to voice their opinion at hearings conducted by special committees set up by Congress. Producers, through participation in the ASC committees, furthermore, have a direct part in the administration of the programs at farm level.

In South Africa the Corn Control Board is a statutory body responsible in the final instance to the Minister of Agriculture. Decisions in respect of producers' prices, etc., are confirmed by a special committee of the Cabinet. Parliament does not prescribe any limits which have to be observed in respect of the level of producers' prices. Producers' representatives are in the majority on the Board and can therefore exercise considerable influence at a high level in policy making. The administration of the program does not require any direct participation by producers, although the general acceptance of control measures by producers greatly facilitates the application thereof.

Corn producers in South Africa, through the Control Board, would seem to have a more direct influence in the formulation of support measures than producers in the United States.

(8) The following statements on the effects of the respective support programs appear to be valid:

(i) In both countries producers' prices have been supported at levels too high relative to livestock and livestock products. This apparently stimulated production and contributed to the surplus problem.

(ii) Although the price support programs may have had favourable effects on farm incomes in general, the large producers received more of the benefits than the small producers.

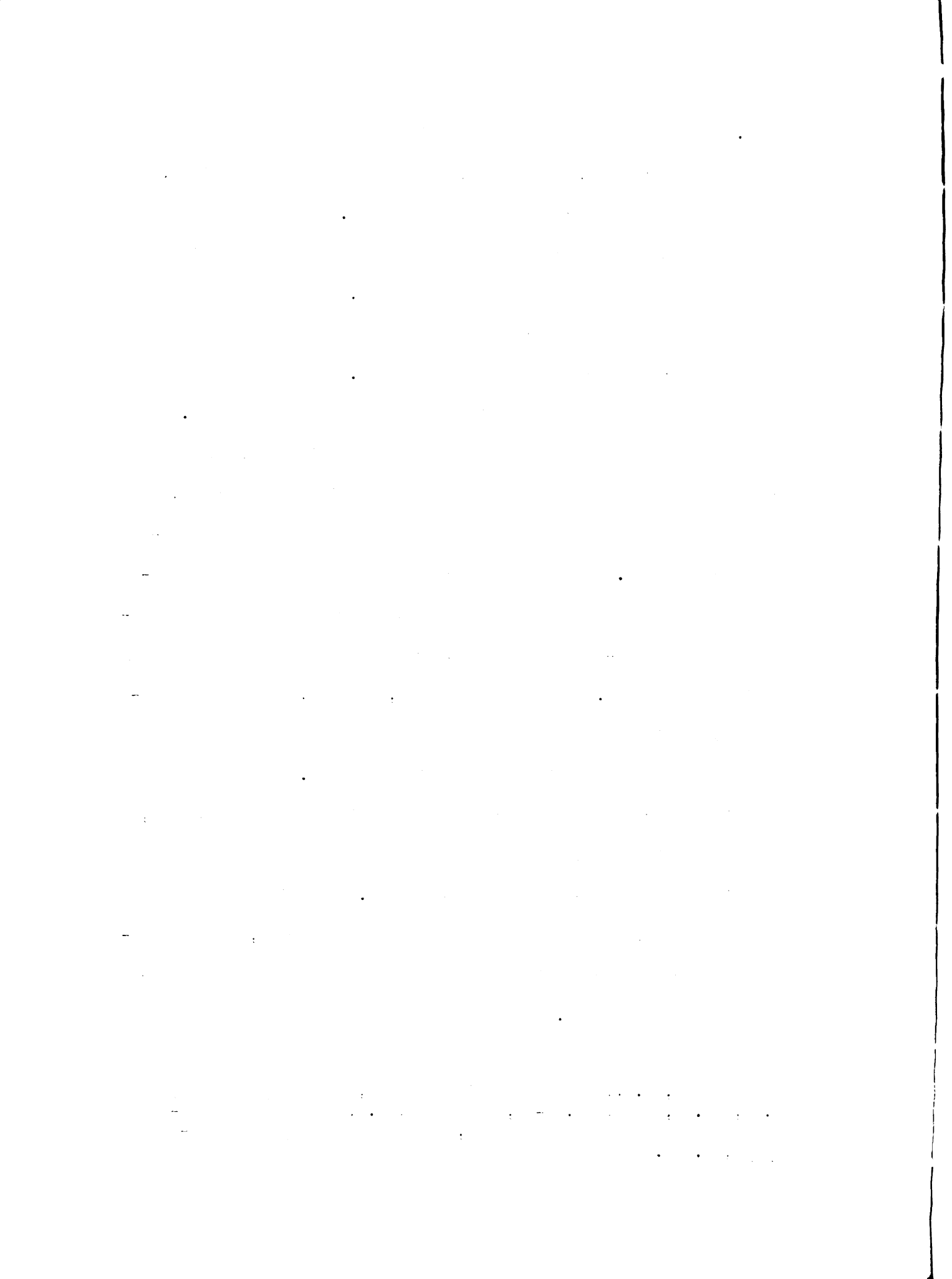
(iii) One of the biggest obstacles to a successful program in both countries seems to have been a significant degree of technological development and learning. This had the effect of shifting the supply curve outward. Although other sectors of the economy also experienced growth, relatively low income-elasticities of demand limited any significant increase in demand. Thus the combination of low price- and income-elasticities depressed equilibrium price levels and increased market surpluses.

It is generally agreed that in the United States differential rates of secular growth in agricultural demand and supply are a principal cause of structural maladjustment. One solution suggested for the current problem of resource imbalance is government assistance to promote an outflow of labour, and an enlargement of existing farm units as well as an increase in capital invested per

worker.¹ Under these conditions marginal adjustments provided by price support programs, operating via changes in relative prices, cannot be expected to provide a major solution. At best such programs are supplementary and should be designed to operate in the same direction as the fundamental program. But it seems as though current support programs may well have had perverse effects upon the desired structural flow of resources.

In South Africa the situation seems to be less clear. It has been shown that although the increased capital investment in agriculture was accompanied by an outflow of white farm workers, there also took place a significant increase in the number of non-white farm workers. Too little work has been done yet on the problems concerning the allocation of productive resources between agriculture and the non-agricultural sector of the economy to come to any definite conclusions. It has been shown, however, that the percentage contribution of agriculture to the Net Geographical Income of the Union has remained fairly stable since 1948/49. As far as the allocation of productive resources within agriculture is concerned, it has been pointed out that the increase in total physical output was decidedly skewed towards field husbandry. In view of important technological advances in the production of field crops, it is possible that increased productivity placed it at a real advantage relative to animal husbandry.

¹Schultz, T.W., "Homesteads in Reverse", Farm Policy Forum, Vol. 8, No. 5, 1956, pp.12-15, and Heady, E.O., "Adjustment Problems in the Corn Belt and Midwest"; Policy for Commercial Agriculture, p.181.



While agriculture as a whole can hardly be called a "sick" industry in South Africa, there may have developed a serious maldistribution of resources within agriculture - producing the wrong composition of products. If this is the case, marginal adjustments through changes in relative prices may prove an important corrective measure. This leads back to the question of what improvements appear advisable in the case of corn, the most important of the field crops.

The Usefulness of the Main Methods used to Support the Corn Industries of the Two Countries:

The most important props in the two types of programs have been minimum support prices coupled with a storage program by the CCC in the United States, and fixed producers' prices with outright purchases of the whole crop by the Maize Control Board in South Africa.

The use of parity prices versus cost of production: It should be clear by now that on the record of experiences in both countries there is little to commend the one method above the other. However, it seems that in neither case was each method used to the best advantage. The levels of parity at which the prices of corn and other basic commodities were supported, as well as the postponement of the time at which modernized parity would come into complete effect were political decisions that do not invalidate the use of some parity index to guide prices. Similarly the method in which the producers' price is currently determined in South Africa is not the only, or the best way available.

In more general discussions it is emphasized that fairly comprehensive statistical series at reasonable cost can be maintained for purposes of a parity formula, while representative estimates of the costs of production require much more detailed, and thus expensive, data before a useful standard can be derived.

Reference was made earlier to the fact that parity prices do not normally reflect the volume of current output and thus do not serve too well as a guide to parity income for agriculture. This is an unfortunate shortcoming, since the income aspect of the farm problem is of more fundamental importance than the price aspect.

The objections listed in Chapter III against using cost of production estimates to fix prices cannot be easily discounted. The most difficult to overcome are the objections against arbitrariness in the allocation of joint costs and in determining entrepreneur's profit and managerial remuneration.

If the program is of a permanent nature, the objection that in the short run cost does not determine price becomes of little importance.

Since the days of Adam Smith there have appeared many discussions on the topic as to whether rent of land is a cost of production, that is, determines the price of the product, or whether it is determined by the price of the product. It turned out that both statements are correct, but not in the same situation. Most writers in later years distinguish clearly between the two cases: The rent of land is a cost factor when there exist alternative demands for its services - that is when supply is somewhat elastic. This is true for corn farms and for the corn industry as a whole since other uses

exist, such as for other feed grains and wheat, etc. But when it is viewed from the standpoint of a group of such industries, where total supply is now fixed to them, the rent of land is "more the result than the cause of the values of the various final products."²

It has been pointed out that the method used at present in South Africa has led to a higher price being established than would have been the case if only efficient producers were used in the sample selected for purposes of costing surveys. Higher prices lead to higher returns from the same output, which in turn leads to higher land values. Over-optimistic estimates regarding the future and the assurance that costs of production estimates will take account of increases in the cost of land may lead to unhealthy increases in the price of land and in the cost structure for the corn industry. It may even lead to a vicious circle of higher prices for corn - higher land prices - higher costs of production - higher prices - etc.

In view of the shortcomings in both methods it would seem appropriate to consider the possibility of using a floor price scheme (purchase-and-storage program) where the support level is based on a percentage of the average price during the previous season or number of seasons - such as the alternative criterion which is now in effect for corn supports in the United States.

²Samuelson, P.A., op. cit., pp.504-505, and also D.H. Buchanan, "The Historical Approach to Rent and Price Theory", Readings in the Theory of Income Distribution, AEA (The Blakiston Co., Philadelphia, 1951), pp.599-637.

Limited operations by the CCC versus one-channel marketing administered by the Corn Control Board: Assuming that a price support and stabilization program has to be administered in a market such as that for corn in the United States, it could hardly be attempted without a central body, either acting in the market directly, or else indirectly through regular agents. As such the CCC could be justified in principle. When shortages developed during the war and rationing had to be imposed, there was as much of a crisis in the livestock market as in the grain market. However, the nature of the corn market in normal times makes it impossible to follow a one-channel marketing scheme in the United States.

In South Africa the dominating influence of human consumption needs made it important to safeguard domestic supplies of corn more closely whenever it was less than adequate. During the years just after World War II, for example, domestic shortages continued temporarily and with world-wide scarcities a very serious situation could have developed without full control by the Board. Since then the situation has changed and the question arises whether a case can still be made for such a system of control.

It would seem that the Board is rapidly approaching a situation where prolonged domestic shortages will be highly unlikely. The Board is admittedly performing a great service in organizing the removal of current surpluses from the market, and in encouraging exportation thereof. But is it necessary that the Board buy the total crop marketed by producers and then administer the

total commercial sales for domestic consumption in order to come into possession of the exportable surplus and a reasonable carry-over stock? It is highly questionable. If a floor price (or minimum support level) is set, a purchase and storage program could be operated by the Board with the aid of appointed agents, as under the present scheme. Prices would be free to rise above the minimum level and geographical advantages would once again come into play: forcing up prices in the areas closer to the consuming centres while prices in the outlying surplus areas would approach the level of the floor price. A system of limited purchases coupled with a fixed price was proposed for the corn industry by the National Marketing Council in 1947³ but it was not well received by producers. A floor price system is at present administered by the Board in respect of kaffircorn (sorghums), but an important section of producers is still strongly opposed to this type of scheme and is continuing its efforts to have it replaced with a pool scheme.⁴ From this it can be concluded that a proposal for a floor price scheme for corn would meet with considerable resistance from producers.

The advantages of a floor price scheme can be briefly stated as follows:

³Report of the National Marketing Council, U.G.27-1947, pp.12-13.

⁴Report of the South African Agricultural Union, 1959, Pretoria, 1959, p.96 (Afrikaans edition).

(1) The Board would still be in a position to provide basic stability to the industry. A purchase and storage program could be to the benefit of producers as well as consumers, since it would protect producers against unduly low prices due to over-production while it would also protect consumers against sharp increases in prices due to seasonal shortages and short crops.

(2) It would involve a smaller degree of interference from the Corn Control Board as far as price formation and the physical flow of corn are concerned, and it would, therefore, mean a greater amount of freedom to individual producers, as well as the trade, in the disposal of the crop.

(3) Producers situated close to consuming centres would be in a position to realize higher prices for their corn than producers in remote areas. The burden of export losses would then rest chiefly on producers in the surplus producing areas, whereas at present the location of the producer has no influence on his contribution to the Stabilization Fund.

In this manner supply might become more sensitive to demand conditions - that is, more elastic - which might lead to a more balanced use of productive resources within agriculture.

(4) Producers, by virtue of the strong position occupied by co-operative agents in the present system, do have the opportunity to muster a sufficient degree of bargaining power to be able to take good care of their interests.

There are a few disadvantages to a floor price scheme as compared to the present one-channel marketing scheme, namely -

(1) The national average price received by farmers would vary intraseasonally, and on an interseasonal basis it might vary more than at present. In view of the earlier discussion on the need for greater stability of incomes, the latter might, however, not be a bad thing after all.

(2) The neat arrangement whereby export transactions are at present covered by contributions to the Stabilization Fund probably would be upset. Evasion of levies collected from traders in respect of purchases from producers, for example, would be encouraged by such a system. Thus, unless the floor price is set equal to or below the anticipated export price, the present arrangements may be complicated.

(3) The same argument applies basically in respect of the consumers' subsidy at present being paid by the Government on all corn sold by the Board for local consumption. It would be difficult to ensure that the subsidy actually reached the final consumer, although competition among millers and in the trade is likely to play an important role towards achieving this end. Under the present system of maximum prices for corn and corn products in the trade, this does not constitute a problem at all.

(4) A temporary disadvantage would be the problems connected with the re-institution of a proper corn market, involving a cash grain market as well as a futures market. During the past

16 years of one-channel marketing, operations have been greatly simplified for sellers (producers and agents) as well as buyers (agents, millers and distributors) and finding their feet in an uncertain market may prove a painful lesson to the present generation in management.

(5) There is a very real danger that if support prices were set too high this would lead to chronic overproduction, as a result of which the whole system might eventually collapse. However, the same danger exists to some extent under the present system too, particularly in view of the dominant role played by costs of production in determining producers' prices.

Generally speaking it would appear that the advantages of a floor price scheme are important enough to merit special attention, and that such a system should be seriously considered by the authorities.

Conclusions:

The following conclusions can be drawn with respect to the current support program for corn in South Africa and its future application:

(1) One-channel marketing in its present form with fixed and uniform prices for producers and fixed mark-ups for the processing and distributing trades is no longer warranted. The comprehensive measures of control and far reaching powers vested in the Control Board are largely the consequences of conditions of scarcity during and immediately after World War II. The situation

has since changed, however, to one of abundance and perennial surpluses which require a re-appraisal of the basic form of control.

(2) Some method of stabilizing agricultural incomes is desirable. In view of the overall importance of corn as a cash crop, which is subject to wide fluctuations in total output, there does exist a need for government action with respect to the corn industry. It would appear that a floor price system along the lines of CCC operations in the corn market holds promise as a possible replacement for the present system.

(3) Before a decision in this respect could be reached a few related matters would have to be settled, namely:

(i) The current income position of farmers, and the role of corn as a source of cash income, would have to be thoroughly investigated. This will throw more light upon the problem of whose incomes should be supported and in what manner this could best be carried out.

(ii) The Board would have to state clearly its attitude toward the continued production of annual surpluses - that is whether supply and domestic demand should be brought into balance or whether producers could go on producing as much as they like provided they continue to contribute to the Stabilization Fund.

(iii) The potentialities of the local market should be investigated with a view to increasing domestic consumption. In this connection the relationship between corn and livestock should receive particular attention.

(4) Under a system of limited control the use of costs of production to determine the target price should be discontinued and after a transitional period it could be replaced by a support price based on a specified percentage (or range of percentages) of average prices actually received by producers during a given number of years preceding the year for which the support level is to be determined. The level of support prices must be realistically set and its effect upon demand-supply conditions should be taken properly into consideration.

(5) Too much emphasis was perhaps placed upon the need for stable producers' prices. Wide fluctuations in total production makes it essential for stability of incomes that prices should fluctuate somewhat from year to year. The introduction of more flexible producers' prices should be seriously considered. This could be linked with a system of flexible consumer subsidies or a domestic price stabilization fund if a maximum degree of stability of consumers' prices is desired (that is, provided that the present basic form of control is continued).

(6) Welfare considerations in the area of personal distribution of income should be taken care of basically through non-price programs rather than by attempting to solve it through high levels of support prices.

(7) In the event of supply control being considered necessary in South Africa, experience has shown that the regulation of production through acreage controls is not likely to succeed

particularly due to the tendency for on-the-farm adjustments to offset planned reductions. Control over the total quantity marketed may be a more successful and also practical proposition, particularly in view of the fact that a very high proportion of the crop is normally marketed by producers. Furthermore, such a system would benefit from the fact that the current one-channel marketing scheme has kept down the number of firms on the buying side of the market thus making it easier to administer a system of tight control.

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Appendix Table 1. Definition of regions making up Area A of the Union of South Africa.

Region	Magisterial districts.
Eastern Transvaal Highveld	Bethal, Benoni, Boksburg, Brakpan, Delmas, Ermelo, Germiston, Heidelberg, Middelburg, Nigel, Springs, Standerton, Witbank.
South-Eastern Transvaal	Amersfoort, Belfast, Carolina, Piet Retief, Volksrust, Wakkerstroom.
Lowveld.	Barberton, Letaba, Lydenburg, Nelspruit, Pelgrimsrust, Soutpansberg.
Northern Transvaal	Grobblersdal, Pietersburg, Potgietersrus, Warmbad, Waterberg.
Rand	Johannesburg, Kempton Park, Krugersdorp, Oberholzer, Potchefstroom, Randfontein, Roodepoort, Vereeniging.
Western Middleveld	Brits, Bronkhorstspuit, Marico, Pretoria, Rustenburg.
Western Transvaal	Delareyville, Klerksdorp, Lichtenburg, Schweizer Reneke, Ventersdorp.
Northern Cape	Mafeking and Vryburg.
North-Western O.F.S.	Bothaville, Bultfontein, Hoopstad, Koppies, Kroonstad, Odendaalsrus, Parys, Theunissen, Ventersburg, Viljoenskroon, Vredefort, Welkom, Wesselsbron, Winburg.
North-Eastern O.F.S.	Bethlehem, Frankfort, Harrismith Heilbron, Lindley, Reitz, Sasolburg, Senekal, Marquard, Vrede.
Eastern O.F.S.	Clocolan, Ficksburg, Fouriesburg, Ladybrand, Thaba 'Nchu, Zastron.
Southern O.F.S.	Bethulie, Bloemfontein, Boshof, Brandfort, Dewetsdorp, Edenburg, Fauresmith, Jacobsdal, Philippolis, Reddersburg, Rouxville, Smithfield, Trompsburg, Wepener.



Appendix Table 2. Expenditures on fertilizer in current pounds and constant pounds,
1936-38 = 100

Region	1951/52		1955/56		Expenditures in constant pounds in 1955/56 as percentage of 1951/52
	Current pounds	Constant pounds	Current pounds	Constant pounds	
Transvaal Highveld	1,265,150	404,201	1,469,976	512,187	126.7
South Eastern Transvaal	212,968	68,041	247,898	86,376	126.9
Lowveld (Transvaal)	366,513	117,097	557,499	194,250	165.9
Western Transvaal	534,118	170,648	904,517	315,163	184.7
Rand (Transvaal)	149,145	47,650	210,900	73,484	154.2
Northern Transvaal	149,041	47,617	314,040	109,422	229.8
Far Western Transvaal	120,929	38,635	157,258	54,794	141.8
Western Middleveld (Tvl.)	259,367	82,865	476,594	166,061	200.4
North Western Free State	598,283	191,145	949,753	330,924	173.1
North Eastern Free State	823,233	263,014	1,026,332	357,607	136.0
Eastern Free State	206,109	65,850	237,160	82,634	125.4
Southern Free State	64,684	20,666	120,660	42,042	203.4
Mafeking) Vryburg) Cape districts	45,688	14,597	122,346	42,629	292.0
Area A	4,795,228	1,532,022*	6,794,933	2,367,572*	154.5
Rest of Union	3,636,314	1,161,762	5,159,334	1,797,677	154.7
Union - Total	8,431,542	2,693,783*	11,954,267	4,165,249	154.6

*Differences due to rounding.

Source: Compiled from Agricultural Census Reports.

Appendix Table 3. Numbers of cattle, sheep and pigs owned by white farmers
in 1949/50 and 1954/55.

Region	Cattle		Sheep		Pigs	
	1949/50	1954/55	1949/50	1954/55	1949/50	1954/55
Transvaal Highveld	519,519	513,396	708,918	972,046	54,553	49,064
South Eastern Transvaal	214,026	188,389	665,377	877,370	15,466	9,686
Lowveld (Transvaal)	266,031	290,332	144,630	168,857	19,362	13,573
Western Transvaal	292,566	285,108	374,531	422,245	24,691	23,765
Rand (Transvaal)	146,548	136,965	86,330	88,569	30,680	31,540
Northern Transvaal	336,018	380,605	76,918	80,966	36,146	30,518
Far Western Transvaal	107,379	99,424	270,729	295,213	9,364	7,811
Western Middleveld. (Tvl.)	388,580	399,447	99,322	111,345	37,976	29,610
North Western Free State	419,595	398,664	1,141,150	1,265,894	28,995	30,118
North Eastern Free State	775,183	705,608	1,675,696	2,183,651	44,207	30,022
Eastern Free State	188,193	168,835	336,697	443,363	11,784	6,431
Southern Free State	292,975	293,009	3,506,546	4,057,122	18,607	14,390
Mafeking) Vryburg) Cape districts	408,690	456,367	199,766	187,231	11,918	10,068
Area A	4,355,303	4,316,149	9,286,610	11,153,872	343,749	286,596
Rest of the Union	2,436,493	2,612,739	18,409,333	21,949,873	355,389	222,499
Union - Total	6,791,796	6,928,888	27,695,943	33,103,745	699,138	509,095

Source: Compiled from Agricultural Census Reports.

Appendix Table 4. Changes in morgen planted to selected major cash crops; average 1954/55-1955/56 over average 1949/50-1950/51.

Region	Wheat	Kaffircorn	Groundnuts	Sunflower- seed	Total	Corn
Transvaal Highveld	- 213	+ 3,659	+ 1,750	+ 1,869	+ 7,065	+ 55,786
South Eastern Transvaal	- 478	- 708	+ 141	+ 148	- 897	- 5,489
Lowveld (Transvaal)	- 2,720	- 4,075	+ 5,651	+ 41	- 1,103	+ 3,654
Western Transvaal	+ 989	- 17,376	+ 5,299	- 6,461	- 17,549	+ 180,019
Rand (Transvaal)	- 736	- 4,059	+ 2,048	+ 2,720	- 27	+ 15,851
Northern Transvaal	+ 2,679	- 25,196	+ 34,565	+ 3,021	+ 15,069	+ 13,666
Far Western Transvaal	+ 451	- 4,820	+ 17,065	- 1,553	+ 11,143	+ 12,792
Western Middleveld (Tvl.)	+ 9,193	- 205	+ 14,228	+ 5,058	+ 28,274	+ 36,770
North Western Free State	+ 17,768	- 9,033	+ 7,299	- 1,442	+ 14,592	+ 77,669
North Eastern Free State	- 34,341	- 5,885	- 19	- 2,146	- 42,391	+ 48,998
Eastern Free State	- 12,886	+ 85	- 137	- 118	- 13,056	- 20,935
Southern Free State	+ 16,696	- 1,944	+ 1,929	+ 268	+ 16,949	+ 12,571
Mafeking } Vryburg } Cape districts	+ 78	- 1,932	+ 32,927	+ 1,490	+ 32,563	+ 22,969
Area A	- 3,519	- 71,529	+ 108,745	+ 2,894	+ 36,591	+ 454,323 [*]
Rest of the Union	+ 40,143	- 5,288	+ 7,112	- 506	+ 41,461	- 41,971
Union - Total	+ 36,624	- 76,817	+ 115,857	+ 2,388	+ 78,052	+ 412,352

^{*}Differences due to rounding.

Source: Compiled from Agricultural Census Reports.

Appendix Table 5. Effect of using actual yield in stead of estimated yield.

Production year	Weighted actual average yield (bags)	Weighted average yield used for cost purposes (bags)	Weighted cost per morgen	Adjusted cost per bag (at weighted average yield)	Cost per bag used in cost estimate	Difference	Fixed producers' price	Corrected price	Corrected price as percentage of fixed producers' price
1950/51	10.48	7.995	114.87	10.96	14.45	3.49	26.5	23.01	86.83
1951/52	6.13	7.995	133.6	21.79	16.71	-5.08	30.0	35.08	116.93
1952/53	10.10	8.225	156.49	15.49	18.88	3.39	32.0	28.61	89.41
1953/54	11.57	8.685	159.1	13.75	18.17	4.42	31.0	26.58	85.74
1954/55	10.89	9.596	174.8	16.05	18.08	2.03	30.25	28.22	93.29
		 shillings						

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