

An Economic Investigation into  
the Chicory Industry

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**Economic Investigation**

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**into the Chicory Industry.**

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By

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FOREWORD.

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In this publication the Division of Economics and Markets offers the public a report on chicory farming in the district of Alexandria. The report is based on a brief farm-management survey conducted by two officers of the Division during the month of February.

Owing to lack of time the scope of the investigation had necessarily to be limited somewhat, but it was thorough, nevertheless. The report throws an interesting light on chicory farming—a branch of agriculture comparatively unknown to the general public, yet one which seems to be making distinct progress.

This investigation has revealed a few very important points and the chicory farmer will undoubtedly find the report of great interest. Certain matters pertaining to State policy could, unfortunately, not be touched upon in this pamphlet. They are mainly concerned with problems of railway transport and are treated fully in a confidential report to the Minister of Agriculture. Their omission detracts considerably from the value of this report, but, even so, the farming community of Alexandria will find in it sufficient food for thought.

A. P. VAN DER POST,

Acting Chief, Division of Agricultural Economics and  
Markets.

Pretoria,

May, 1929.

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[TRANSLATION.]

# An Economic Investigation into the Chicory Industry.

## INTRODUCTION.

THE investigation on which this bulletin is based was specially undertaken at the request of the farmers of the Alexandria district, Cape Province. It includes the organization of chicory farming, its results, and the marketing of the product.

Three different parties are concerned in the matter, viz., the producers or farmers, the manufacturers, and the Railways and Harbours Administration. Consequently, an endeavour was made to obtain the opinions of all concerned.

Twenty-three farmers were visited, and a complete business survey was made of their farms according to the farm survey method, firstly, to ascertain the importance of the chicory industry for the farm as a whole, and secondly, to ascertain the cost of production. In the analysis of the survey, however, only the data supplied by twenty-one farmers have been used, because in the other two cases the survey was not sufficiently complete.

Manufacturers were approached to ascertain their opinions regarding the local product in comparison with the imported article and, further, the relation of the manufacturing cost between local and imported products and to what extent railway tariffs affected the two. Eight manufacturing firms, who manufacture practically all chicories—imported as well as local brands—were interviewed. It is felt that it is of vital importance to know whether or not manufacturers approve of the local product, as any extension of the industry would depend mainly on their attitude.

Finally, officials of the Railways and Harbours Administration were consulted in connection with railway tariffs.

## CHAPTER I.

### FARMING CONDITIONS AND METHODS.

A study of farming conditions and methods of production in regard to chicory forms the genesis of these investigations. Farmers can often do more for themselves by farming on scientific lines than the Government can do for them by means of legislation.

### METHOD OF RESEARCH.

The method followed to assemble data on farming or production was, as has already been stated, the farm survey method. The survey method is based on the principle of averages, in accordance with which, if the chances of an estimate being either too high or too low are equal, the results will verge on the correct answer in approximately equal figures. Two conditions are essential where this method is followed. In the first place, the figures obtained must not be based merely on guesswork but on a *stet* estimation and, secondly, there must be sufficient cases to render operative the law of averages.

In order to comply with the first of these two conditions, a questionnaire was compiled for completion by the surveyors in consultation with the farmers. As regards the number of cases, it would have been better if more farms had been visited, but, nevertheless, a sufficient number of cases were obtained to ensure the reliability of the data. Much greater reliance can be placed on these when it is realized that more than one-seventh of all farmers producing chicory were visited, and that any possible difference as between farms was fairly accurately determined.

### REGIONAL CONDITIONS.

It is important, in cases where conclusions are drawn on one year's figures, to ascertain whether that particular year was better or worse than usual, and whether the farms visited can be regarded as representative of the general conditions in that environment.

In South Africa, chicory might almost be regarded as a monopoly of the farmers who produce it. There are only 140 farmers who produce chicory in the Alexandria district. Chicory was also produced experimentally in other parts of the country, but at present Alexandria is the only district in which it is produced extensively, i.e. in a small area near the coast.

Apparently, sandy, loam soil is best suited to chicory, provided the rainfall is sufficient or irrigation is possible. The major portion of the lands on which chicory is grown in the Alexandria district is near the sea, and consists of sandy dunes, but, owing to the luxuriant vegetation, the soil has become rich in humus. The soil conditions, therefore, conform to the requirements of chicory.

The growing season of chicory lasts six months, and during that period the rainfall should be equally distributed to ensure the best results. In this respect, also, the chicory-producing area of the Alexandria district is well served. There are, of course, also dry and wet years, as in other parts of South Africa, but the difference, year by year, and even month by month, over a long period, is almost negligible. As the majority of chicory producers generally work under the same conditions of climate and soil, and as a few farms, which might be regarded as representative of the farms further away from the coast, were taken, it may be accepted that the twenty-one farms used in the analysis are fairly representative.

So far as seasonal climatic conditions are concerned, the research was conducted during an exceptionally good season. Unfortunately, there are only three stations that report the rainfall of that area, but even from the reports of these three, it will be seen that 1928 was an exceptionally favourable year.

TABLE I.

*Rainfall at Alexandria as registered at three stations.*

STATION.	YEAR.									
	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	Total.	Average.
Alexandria.....	22-17	33-41	22-58	18-22	26-92	21-48	11-60	25-78	182.16	22-78
Longvale.....	23-48	30-60	20-58	16-23	22-83	12-75	9-83	22-77	159.07	19-88
Longbush.....	—	—	—	—	—	11-19	22-56	46-06	79.81	26-60
TOTAL.....	45-65	64-01	43-16	34-45	49-75	45-42	43-99	94-61	421.04	69-26
Average.....	22-82	32-00	21-58	17-22	24-87	15-14	14-66	31-54	—	23-08

According to Table I, the lowest average rainfall is 14.66 inches for 1927; the highest, 32.0 inches in 1922, and 31.54 inches in 1928. The average rainfall throughout is 23.08 inches. The rainfall for 1928 is, therefore, 8.46 inches above the average. This exceptionally favourable rainfall resulted in the best chicory crop known, and when the tables, which follow, are studied, this point should not be lost sight of.

#### BUSINESS METHODS.

##### (a) *Size of Business.*

The average extent of the twenty-one farms was 496.5 morgen; 290 being bush, 135 pasture, and 68.4 under crops. Therefore, 13.8 per cent. of the whole farm was under cultivation. Of the 68.4 morgen under crops, a proportion of 13.8 morgen, or 20.1 per cent., was under chicory. Maize formed the main crop, and occupied 28.7 morgen, or 42.0 per cent. of all the lands. This is a very important product, not only as food for farm labourers, but also as a fodder for cattle.

TABLE II.

*Average Size of Twenty-one Farms in Alexandria district, Crop Year, 1928-1929.*

Lands.	Morgen per Farm.	Percentage of certain Crops of all Lands.
Chicory.....	13-76	20-1
Maize.....	28-74	42-0
Oats.....	5-05	7-4
Barley.....	13-02	19-0
Other Crops.....	7-84	11-5
TOTAL under Crops.....	68-42	100-0
Farmstead.....	2-93	—
Pasturage.....	135-09	—
Bush.....	290-06	—
TOTAL per Farm.....	496-5	—
Percentage of Farm under Crops.....	—	13-8



The average investment per farm was £4,236.2. Of this, 52.6 per cent. was expended on land, and 27.5 per cent. on buildings and improvements. The fixed investment was, therefore, 78.0 per cent. of the total capital invested. The working capital, including livestock and farm implements, amounted to £931.1 or 22 per cent. of the total capital, particulars of which are furnished in Table III.

TABLE III.

*Capital Invested in Twenty-one Farms in Alexandria district, Crop Year, 1928-1929.*

Item.	Beginning of Year.	End of Year.	Average.	Percentage of Whole.
Land.....	£ 2138.8	£ 2138.8	£ 2138.8	% 50.5
Buildings and Improvements.....	1156.9	1175.7	1166.3	27.5
Implements.....	174.6	175.0	174.8	4.1
Livestock.....	768.5	744.2	756.3	17.9
<b>TOTAL.....</b>	<b>4238.8</b>	<b>4233.7</b>	<b>4236.2</b>	<b>100.0</b>

The total capital did not vary greatly from the beginning to the end of the year. Farming operations were more or less stabilized, without there being much of a tendency to extend such livestock as usually contribute considerably to an increase in the inventory, and were maintained more or less at the same figure, increases being sold.

As farms increase in size, so does the average number of cows per farm. On farms averaging 159.5 morgen in extent, 17 cows are kept; on farms averaging 497 morgen, 56 cows, and on farms averaging 1,030 morgen, 91 cows. The capital per farm also increases proportionately to the increase in the size of the farm.

There is not such a direct relation between the size of the farm and the number of morgen under crops. Especially in the case of morgen under chicory, the increases would not be in proportion to an increase in the size of the farm. Chicory requires very intensive cultivation, and large farms, comprising a great variety of undertakings, can concentrate less on chicory than can smaller farms with only a few sources of income. The greatest average number of morgen under chicory, 21.3 morgen, is found where farms are from 200-399 morgen in extent. On these farms the average number of cows kept, per farm, is 35 (Table IV).

TABLE IV.

*How size of Farm affects Morgen under Crops and under Chicory, Number of Cows, and Capital per Farm.*

Group.	Number of Cases.	Average Morgen per Farm.	Morgen under Crops.	Morgen under Chicory	No. of Cows.	Capital.
1 to 199 Morgen.....	3	159.5	41.9	5.3	17	2,132
200 to 399 ".....	6	306.3	83.0	21.3	35	3,348
400 to 599 ".....	8	497.0	60.1	12.3	56	4,262
600 to 799 ".....	3	675.3	49.2	13.2	79	6,248
800 morgen and more.....	3	1030.0	101.7	10.5	91	6,025
<b>Weighted Average.....</b>	<b>21</b>	<b>496.5</b>	<b>68.4</b>	<b>13.8</b>	<b>53</b>	<b>4,236</b>

*(b) Business Profits.*

The total revenue, including farm products used for domestic purposes and labour, averaged £1,441.9 per farm. Of the £1,441.9, £723.8 was derived from chicory; £278.3 from livestock, and £220 from animal products. Chicory, the main source of revenue, therefore, contributed 50.2 per cent., and livestock and animal products 34.6 of the total revenue (Table V).

TABLE V.

*Summary of Receipts and Disbursements on Twenty-one Farms in Alexandria district. Crop Year, 1928-1929.*

RECEIPTS.			DISBURSEMENTS.		
Item.	Receipts per Farm.	Percentage of all Receipts.	Item.	Expense per Farm.	Percentage of all Expenses.
Capital Increase....	£ 6.6	% .5	Labour.....	£ 350.7	% 43.9
Chicory.....	723.8	50.2	Buildings.....	40.0	5.0
Other Crops.....	63.2	4.4	Implements.....	38.0	4.8
Livestock.....	278.1	19.3	Feed and Supplies.	50.3	6.3
Animal Products...	220.0	15.3	Bags.....	35.9	4.5
Labour.....	60.0	4.2	Seed.....	20.8	2.6
Products utilized on Farm.....	81.0	5.6	Livestock Bought..	116.8	14.6
Miscellaneous.....	9.2	.6	Miscellaneous.....	146.2	18.3
<b>TOTAL.....</b>	<b>1,441.9</b>	<b>100.0</b>	<b>TOTAL.....</b>	<b>798.7</b>	<b>100.0</b>
Capital and Operator's Earnings	643.2				
Interest on Capital at 5 per cent...	212.0				
Operator's Earnings	431.2				

The total expenditure, including the value of labour performed by members of the family, namely, £41.4 per farm, amounted to £798.7. If this amount is deducted from the total receipts of £1,441.9, £643.2 remains. This amount is called capital and operator's earnings.

If these farms were regarded as business propositions, they would have to pay a certain amount of interest on the capital invested. In this case, an investment averaging £4,236 per farm was made. If interest is calculated at 5 per cent. it would amount to £212. This amount deducted from the capital and operator's earnings of £643.2 leaves an amount of £431.2. This is the amount the farmers received on an average as managers and labourers, and is called "Operator's Earnings."

If the sum for unpaid family labour, viz., £414, and the interest on capital, £212, is added to the operator's earnings of £431.2, the result would be the net farm income. This is the amount that the farmer has over to provide for himself and his family if there are no debts on which interest has to be paid.

The fact must, however, be borne in mind that in the computation of the operator's earnings it was assumed that the farmers, selling through their co-operative association, would receive 20s. per 100 lb. for their chicory. This brought the average price received by co-operative farmers and non-co-operative farmers to 19s. 5d. per 100 lb. In view of there being a record chicory crop this season, it is anticipated that prices will drop slightly. For this reason, a calculation will be made on the assumption that prices will average 18s. and 16s. respectively.

The average yield per farm was 74,900 lb. At an average price of 18s. per 100 lb., the revenue derived from chicory would work out at £674.1 per farm, instead of £723.8, and the operator's earnings would be £381.5 instead of £431.2. At an average price of 16s. per 100 lb. the revenue derived from chicory would amount to £599.2, and the operator's earnings to £306.6. It is anticipated, however, that the average price for the year will be approximately 18s., as a large proportion of the crop has already been sold at more than 18s.

*(c) Factors that affect Business Profits.*

It is difficult, where there are only a few instances, to ascertain definitely what factors affected the receipts and, more especially, the operator's earnings. In this case, two factors apparently have a direct influence on the operator's earnings, namely, capital per farm, and morgen under chicory.

In the case of capital invested per farm, the law of diminishing returns becomes operative. The operator's earnings increases from £234, where £2,500 and less has been invested per farm to £933, where between £4,501 and £5,500 capital per farm has been invested. After that, it drops to £302, where more than £5,501 per farm has been invested.

TABLE VI.

*Effect of Capital per Farm on nett Farm Income and Operator's Earnings on Twenty-one Farms in Alexandria district, Crop Year, 1928-1929.*

CAPITAL PER FARM.			Nett Farm Income.	Operator's Earnings.
Group.	No. of Cases.	Average Capital.		
£2,500 and less.....	5	£ 2272-8	£ 372-0	£ 234-4
£2,501 to £3,500.....	5	2969-6	466-2	281-6
£3,501 to £4,500.....	3	3873-3	917-0	721-7
£4,501 to £5,500.....	3	5101-3	1318-3	933-3
£5,501 and more.....	5	7165-4	696-0	301-6
AVERAGE.....	21	4236-2	684-6	431-2

The capital per farm is determined, on the one hand by the number of morgen and, on the other, by the number of livestock per farm. As already shown in Table IV, livestock and capital increase as the farm increases in size.

#### IMPORTANCE OF CHICORY CULTURE IN FARM PRACTICE.

As already shown in Table II, 20.1 per cent. of all lands was under chicory, and according to Table V chicory yielded 50.2 per cent. of the total receipts, while only 4.4 per cent. of the revenue was derived from other crops. As chicory is such an important source of revenue, it can be appreciated that the morgen under chicory must considerably affect the operator's earnings.

In respect of farms averaging 4.3 morgen under chicory, the operator's earnings have been minus £44.6; of those of 14.0 morgen, £481.3, and of those averaging 31.2 morgen, £882.8 (Table VII).

TABLE VII.

*Effect of Morgen under Chicory on Nett Farm Income and Operator's Earnings on Twenty-one Farms in Alexandria district, Crop Year, 1928-1929.*

MORGEN UNDER CHICORY.			Nett Farm Income.	Operator's Earnings.
Group.	No. of Cases.	Average No. of Morgen per Farm.		
			£	£
5 and less.....	5	4.3	122.8	-44.6
6 to 10.....	6	7.8	714.5	542.7
11 to 15.....	3	14.0	759.7	481.3
16 to 20.....	3	18.0	608.7	348.7
21 and more.....	4	31.2	1,342.8	882.8
AVERAGE.....	21	13.8	684.6	431.2

#### EXPENDITURE AND PROFIT ON CHICORY.

As chicory is a product of such importance to farmers in the Alexandria district, an examination of all the details connected with the cost of production of chicory will be of interest.

The total revenue of chicory, assuming that farmers who are members of a co-operative society have received 20s. per 100 lb., averaged £723.8 per farm. The crop, however, was exceptionally good, so that it cannot be expected that prices will remain so high; consequently, prices were worked out at 18s. and 16s. per 100 lb. It is anticipated that the ultimate price will be approximately 18s. (Table VIII.)

TABLE VIII.

*Expenditure and Revenue on Chicory on Twenty-one Farms in Alexandria district, Crop Year, 1928-1929.*

Item.	Costs.		Item.	Returns.		
	Expenditure per Farm.	Percentage of Total.		Revenue per Farm under Chicory.		
				At 19s. 5d.	At 18s.	At 16s.
	£	%		£	£	£
Labour.....	178.1	57.9	Chicory sold.....	723.8	674.1	599.2
Implements used...	23.6	7.7	Miscellaneous.....	7.6	7.6	7.6
Bags.....	23.8	7.7				
Seed.....	12.6	4.1				
Ox Labour.....	12.0	3.9				
Fuel.....	12.0	3.9				
Commission.....	7.4	2.4				
Drying of Chicory..	4.9	1.6				
Transport.....	5.0	1.6				
Lease of Land.....	4.8	1.6				
Kiln.....	3.8	1.3				
Fertilizer.....	3.7	1.2				
Twine.....	1.3	.4				
Miscellaneous.....	14.6	4.7				
<b>TOTAL.....</b>	<b>307.6</b>	<b>100.0</b>		<b>731.4</b>	<b>681.7</b>	<b>606.8</b>
Profit on Chicory (per Farm).....				423.8	374.1	299.2
Hundred Pounds Produced (per Farm).....				749.0	749.0	749.0
Expenditure per 100 lb.....				s. d.	s. d.	s. d.
				8 2	8 2	8 2
Revenue per Morgen.....				£	£	£
Expenditure per Morgen.....				53.2	49.5	44.0
Profit per Morgen.....				22.4	22.4	22.4
				30.8	27.1	21.6

The total expenditure on chicory amounted to £307.6; of this amount, £178.1, or 57.9 per cent., was expended on labour. The only other disbursements of any importance were for bags, use of implements, and seed. The three items together amounted to 19.5 per cent. of the total expenditure which, divided by the number of 100 lb. produced, gives a production cost of 8s. 2d. per 100 lb.

It must be pointed out that the cost of production includes an item for rent of land, which was arrived at by calculating interest at 5 per cent. on the value of land for ordinary crops as estimated by farmers, which is not based on the value of chicory land, as such value is the result rather than the cause of chicory being a paying proposition. There are, however, persons who consider that rent of land should not rank as expenditure in arriving at the cost of production. Should this theory be put into practice, and rent of land omitted, the cost would be reduced by 1.5 pence per 100 lb.

On an average price of chicory at 19s. 5d. per 100 lb., the profit per farm worked out at £423.8. The return per morgen in chicory

amounted to £53.2, the expenses to £22.4, and the profit per morgen to £30.8. If the price of chicory were reduced to 18s. the profit per farm would drop to £374.1, and per morgen to £27.1; and if the average price dropped to 16s. per 100 lb., the profit per farm would be £299.2, and per morgen £21.6.

As already shown in Table VIII, expenditure on labour amounted to 57.9 per cent. of all expenditure on chicory production. Chicory requires a great deal of manual labour. Unfortunately, the working days of the various operations in connection with chicory could not be obtained in full for all of the twenty-one farms. On ten farms, where full particulars of the working days were obtained, it was found that 267 days of manual labour were required on an average to cultivate one morgen under chicory.

As chicory demands so much manual labour, it is essential to obtain cheap labour. The cost of native labour in the Alexandria district is at present still low. For the twenty-one farms, the average cost of labour amounted to 1s. per working day per native. In five cases, the costs averaged 7d., and in seven cases, 10d.; in six cases 1s. 2d., and in three cases an average of 1s. 6d.

In the calculation of the rate per diem, it was assumed that a native works 25 days per month, or 300 days annually. The rate, as worked out, is only for regular farm hands. The number of days worked by extra labour was not enumerated, and only the amount paid out, viz., £100.66 per farm, is given. There is, however, no apparent reason why extra labour should be hired at a higher figure than that of regular farm hands.

The cost of European labour amounted to 10s. 8d. per diem. The reason why the rate is so high is because many European labourers worked on a share basis and the produce they received was calculated at farm rates. As they shared part of the risk of failure, the amount cannot be regarded as too high.

Particulars are given in Table IX.

TABLE IX.

*Cost of European and Native Labour on Twenty-one Farms in Alexandria district, Crop Year, 1928-1929.*

Non-European Labour. Groups.	No. of Cases.	Total days Worked.	Total Expenditure.			Rate per Diem.
			Cash.	Produce.	Total.	
			£	£	£	s. d.
9d. and less.....	5	14,400	232.2	215.4	447.6	0 7
9-01d. to 12d.....	7	21,850	397.3	500.35	897.65	0 10
12-01d. to 15d.....	6	15,900	320.9	575.65	896.55	1 2
15-01d. and more.....	3	12,000	500.0	413.5	913.5	1 6
<b>TOTAL.....</b>	<b>21</b>	<b>64,150</b>	<b>1450.4</b>	<b>1704.9</b>	<b>3155.3</b>	<b>1 0</b>
European Labour.....	8	2,300	1018.0	206.1	1224.1	10 8
			Total Amount.			Average per Farm.
Extra Labour.....			£2113.98			£100.66

A factor that affected, to a large extent, the profit on chicory, was the production per morgen. The profit on chicory increased from £128.2, with a yield of 2,870 lb. per morgen, to £636.9, with a yield of 5,910 lb. per morgen. There is a small decrease in profit where the production exceeds 6,501 lb. per morgen. This may be due to the fact that the high production could only be obtained by very intensive cultivation, which increased the cost abnormally, or it may be, as was found in a few individual cases, that the high production only took place on farms which has little chicory and that the cost had to be divided between only a few units. Unfortunately, it cannot be proved conclusively which factor operated in this instance.

The effect of production per morgen on profit on chicory is shown in Table X.

TABLE X.

*Effect of Production per Morgen on Profit on Chicory and Operator's Earnings on Twenty-one Farms in Alexandria district, Crop Year, 1928-1929.*

Production per Morgen.			Total Expenses.	Profit on Chicory.	Operator's Earnings.
Group (100 lb.)	No. of Cases.	Average in 100 lb.)			
20.00 to 35.00.....	3	28.7	£ 109.1	£ 128.2	£ —6
35.01 to 50.00.....	6	40.9	312.3	230.7	298.8
50.01 to 65.00.....	5	59.1	477.4	636.9	640.4
65.01 and more.....	7	72.6	242.6	566.0	592.7
Weighted Average.....	21	54.42	307.6	421.22	431.2

Before summarising the farm practice part of the report, it is necessary to emphasize the fact that the season was an exceptionally good one. The average yield per morgen was 5,400 lb. What would have happened if the year had been less favourable? Let us assume (a) a production of 4,400 lb. and (b) a production of 3,400 lb. per morgen.

To arrive at the cost of labour, the figures obtained on the ten farms, where complete labour-figures were available, may be taken as a basis. Of the 267 days worked, per man, per morgen of chicory, there are 166 days which include the work of ploughing, harrowing, planting, cultivating, weeding (with hoe and plough), which would be maintained at any rate, no matter how large the crop. The remaining 101 days would probably diminish in proportion to the diminishment of the crop.

On the production basis of 4,400 lb. per morgen, the remaining 101 days would be reduced to 82, and the cost of labour to  $\frac{82}{166} \times £178.1$ , or £165.4. Of all the other expenditure, that on bags, commission, and conveyance would probably be the only one that would decrease in accordance with a decrease in production per morgen. On the basis of  $\frac{82}{166}$  the total decrease, including labour,

would amount to approximately £19.5. The total expenditure on chicory per farm would then be £204.1 and, per morgen, £20.9. The revenue at 20s. per 100 lb. would be £44 per morgen, and the profit £23.1 instead of £30.8, as in the 1928-1929 season. The cost of production per 100 lb. would be 9s. 6d. instead of 8s. 2d.

On a production of 3,400 lb., the total expenditure per farm would amount to £268.9, and £19.6 per morgen under chicory, if the same basis as the one mentioned above were adopted. The revenue at 20s. per 100 lb. would be £34, and the profit £14.4 per morgen. The cost of production per 100 lb. would be 11s. 6d. instead of 8s. 2d.

Reduced production would mean better prices, and the revenue calculation at 20s. per 100 lb., as in the above two examples, would probably not be too high.

#### *Conclusions.*

It is clear from the foregoing that farmers, even in lean years, make a fair profit on chicory. It should be borne in mind that chicory producers are already enjoying the benefits of protection. The import duty of 16s. 8d. per 100 lb. of chicory root is actually twice as high as the average cost of producing 100 lb. chicory root in South Africa.

Farmers should pay more attention to their own methods of production. They could probably increase their profits if they reduced the cost of production and practised more effective methods of cultivation.

Manufacturers criticize the quality of the product, the state of the root, and of its desiccation, features to which farmers should pay more attention and which will be discussed at greater length elsewhere in this report.

## CHAPTER II.

### IMPORTATION AND MANUFACTURE.

#### IMPORTATION.

The major portion of the 1928 crop, which was exceptionally good, will only be manufactured and consumed in 1929. The size of the crop is not yet known, consequently, the 1927 production and that of previous years, which are known, will be used in this report.

TABLE XI.

#### *Quantity and Value of Imported Chicory.*

Year.	Root.			MANUFACTURED.		
	Quantity. lb.	Value £	Price per 100 lb.	Quantity lb.	Value £	Price per 100 lb.
			s. d.			s. d.
1925.....	1,100,284	7,610	13 10	1,320,300	15,453	23 5
1926.....	1,050,180	6,078	11 7	974,056	10,825	22 3
1927.....	712,494	3,620	10 2	1,104,367	10,921	19 9
1928.....	1,872,276	10,762	11 6	1,185,634	11,744	19 10

The quantities of chicory root imported during 1925 and 1926 were more or less the same, but in 1927, there was a decrease of 300,000 lb. The 1927 crop, with a rainfall of 14.66 inches, was a



very lean one, as a result of which large quantities of roots were imported during that year.

Unfortunately, no production data exist for the years 1924, 1926 and 1927, so that it is difficult to explain the variation of import figures for 1929. The production figures for the years 1921, 1922 and 1923, are known, but during this period no import figures of chicory root are available; consequently, it is impossible to form any conception of the total amount of chicory root consumed. The year 1926 is the only one for which both import and local production figures are available. In 1926, the local production reached 1,778,921 lb., and the imports 1,050,180 lb. The total quantity of root obtained amounted, therefore, to 2,839,101 lb. Without the consumption figures of other years, these figures would, however, be of little value.

The importation of ground chicory (*vide* Table XI) remains more or less the same year by year; consequently, it is to be inferred that the local product does not greatly affect the importation of the ground product. In 1927, when much less root was imported than during the previous year, the importation of ground chicory increased. In 1928, when the importation of root increased abnormally, the importation of ground chicory remained more or less the same. It appears, therefore, that there is a constant demand for imported ground chicory. Probably, most of the imported ground chicory is used by the housewife who mixes her own coffee with chicory.

TABLE XII.  
*Total Local Chicory Yield.*

Year.	Morgen Planted.	Yield in lb.
1921.....	256.....	144,800
1922.....	404.....	958,543
1923.....	647.....	1,691,441
1926.....	626.....	1,778,921

As already stated, data for local production were not regularly kept, and the above figures (Table XIII) serve only to indicate that production has increased considerably since 1921.

TABLE XIII.  
*Total Consumption of Local and Imported Chicory Root by Eight of the Largest Factories in South Africa in 1928.*

Manufacturer.	Local Root lb.	Imported Root lb.	Total.	Total Cost of Local Product to Factory per 100 lb.		Total Cost of Imported Product to Factory per 100 lb.	
				s.	d.	s.	d.
1.....	70,000	—	70,000	25	2	—	—
2.....	35,972	349,440	385,412	24	1	32	4
3.....	97,500	108,000	205,500	25	1	33	0
4.....	128,439	291,200	419,639	25	8	33	4
5.....	454,876	—	454,876	20	9	—	—
6.....	672,000	168,000	840,000	24	1	29	6
7.....	109,462	134,385	243,847	25	0	31	5
8.....	272,694	604,800	877,494	21	9	28	8
Total.....	1,840,943	1,655,825	3,496,768	191	7	188	4
Average.....	—	—	—	23	11	31	5

Personal visits were paid to eight manufacturers of chicory in the Union. Of the total amount of root imported in 1928, 88 per cent. was treated by these eight manufacturers. There is, therefore, sufficient proof that reliable data were collected.

The total consumption of chicory root by the eight manufacturers in 1928 amounted to 3,496,768 lb. Of this figure, 1,840,943 lb., or 53 per cent., was produced locally. The 1927-28 crop was a very lean one, and the imports, consequently, exceptional. A normal year would show, therefore, in the total consumption of greater percentage of the local root. The only other available data, viz., the 1925-26 season (*vide* Table XII) show that 1,778,921 lb. of the total consumption of 2,829,101 lb. or 63 per cent. was produced locally. Last year's record production will show, undoubtedly, that the percentage of local root that will be consumed in 1929 will be still higher than that of previous years.

To determine the total consumption of chicory in the Union, it is necessary to place the imported ground chicory on the same basis as the root. Imported ground chicory loses approximately 20 per cent. in weight in the roasting process; therefore, the original weight of the imported ground chicory in 1926 equals  $\frac{100}{80} \times 974,056 = 1,095,813$  lb. Thus the total quantity of chicory available in the Union is:—

Root equivalent of imported chicory ... ..	1,095,813 lb.
Total quantity of root imported ... ..	1,050,180 lb.
Total quantity of root produced locally ... ..	1,778,921 lb.

Total ... .. 3,924,914 lb.

The total local production is, therefore, 45 per cent. of the total consumption. In other words, South Africa was, in 1926, dependent for her supply from overseas to the extent of 55 per cent. of her total consumption of chicory. Similar information for the year 1927 and 1928 would be of interest, but, unfortunately, no data for its compilation are available.

#### DIFFERENCE IN PRICE BETWEEN IMPORTED AND LOCAL PRODUCTS.

The average price of imported chicory is 31s. 5d. per 100 lb. (Table XIII). The price per 100 lb. delivered at the coast is approximately 12s. per 100 lb., plus an import duty of 16s. 8d. per 100 lb. and railage and other small charges. The average price of the local product at the factory (i.e. 1928 crop consumed in 1929) is calculated at 23s. 11d. per 100 lb. In all cases of the local product, except one where the calculation was made at 18s. 6d. per 100 lb., the manufacturers placed the purchase price at 20s. The Chicory Co-operative Society fixed the price at 20s. at the beginning of the season, but it is anticipated that the average price will be approximately 18s. per 100 lb.: the average price paid by the Alexandria Co-operative Chicory Society in 1928 was 19s. 1d., and in 1927, 17s. 4d. per 100 lb. The average price for the local product will, therefore, not be 23s. 11d. but approximately 21s. 11d. per 100 lb., while the imported article will be 31s. 5d. per 100 lb. Consequently, the latter costs 10s. per 100 lb. more than the former. As will be shown later, this difference of 10s. per 100 lb. is primarily due to the fact that in the determination of the prices of the local product no distinction was made. The South African product is not graded and, therefore, only one price is paid. On the other hand, it is forced into competition

with the imported article, which is invariably of first class quality. As the imported product is of such superior quality, it loses approximately only 20 per cent. weight in the roasting process, while the local product loses 26 per cent. It is clear, therefore, that the price of the South African product should be reduced.

No study was made of the ground article. Investigations, however, brought to light that the imported ground chicory was only used in the retail business. As a rule, manufacturers do not import ground chicory, due probably to the high import dues of 33s. 4d. per 100 lb. The retail price of the imported article is 33½ per cent. higher than that of the local ground article.

A special effort would be needed to create a greater demand for the local ground product.

Sufficient proof has been adduced that the local product is, if properly treated during the production and manufacturing processes, equal to the imported article. It is only necessary that the best young and clean root, which has been grown under the best conditions and properly manufactured, should be used. Attractive packing, together with proper propaganda and reliable salesmen, should prove very helpful in creating a greater demand for the local product.

It should, however, be borne in mind that insufficient chicory is at present produced in South Africa to meet the demand. If the local market is to be captured, it is necessary that the production be increased by 100 per cent. The increased production must, however, be in proportion to the demand, otherwise the market will be glutted in one year. As production is dependent on climatic conditions, it is necessarily unstable at times and cannot be depended upon. The difficulty of chicory production is that it is confined to a limited area. A drought in this area has, therefore, a great effect on the production. There is no doubt that South Africa could be absolutely independent in this respect, and produce sufficient chicory for her own consumption. It is, however, essential to the chicory crop, in order that the manufacturer may decide in time whether or not to import chicory.

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## CHAPTER III.

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### RAILWAY TARIFFS.

At present, chicory is produced almost exclusively in the Alexandria district. Consequently, it has to be transported all over the Union, and an examination of railway charges will, therefore, be of interest.

#### RAILAGE ON CHICORY ROOT.

In the case of the desiccated root, and for practical purposes, transportation to manufacturing centres only will be discussed. Chicory root is only treated in greater or smaller quantities in Alexandria, Durban, Capetown, Johannesburg and Pretoria. The manufactured product is used mostly for blending with coffee, but it is also sold in smaller quantities as chicory.

With the exception of the factory at Alexandria, all the factories are at a considerable distance from the centre of production. As

Alexandria is near Port Elizabeth, and chicory is manufactured in Durban and Capetown, there is competition between the South African Railways and the shipping companies. This fact renders the problem much easier. From Alexandria to Durban and Capetown, "Sea Competitive Tariffs" are in operation, with the result that the relative tariffs on the South African Railways are much lower than they would otherwise have been. The railage from Alexandria to those ports is reasonable, and need, therefore, not be discussed further.

The railage from Alexandria to the other manufacturing centres, viz., Johannesburg and Pretoria, is based on Tariff No. 6. Chicory root, however, does not benefit by the "Preferential Tariff" like so many other South African products which have to compete with those from overseas. A comparison of the transportation costs on the local and imported products to various large centres are given in Table No. XIV.

TABLE XIV.

*Railage on Chicory Root from Alexandria as well as from the Nearest Port.*

Johannesburg.		Pretoria.		Durban.		Capetown.	
Local from Alexandria.	Imported from Lourenco Marques.	Local from Alexandria.	Imported from Lourenco Marques.	Local from Alexandria.	Imported from Lourenco Marques.	Local from Alexandria.	Imported from Lourenco Marques.
In pence per 100 lb.	In pence per 100 lb.	In pence per 100 lb.	In pence per 100 lb.	In pence per 100 lb.	In pence per 100 lb.	In pence per 100 lb.	In pence per 100 lb.
49	34	50	33	39	—	37	—

The higher transportation costs on the local product are mainly due to the fact that the distance from Alexandria to Johannesburg and Pretoria is greater than from Lourenco Marques. It will, therefore be seen from Table XIV that the transportation by rail of imported chicory root is cheaper by 1s. 3d. per 100 lb. in the case of Johannesburg, and 1s. 5d. in the case of Pretoria, than it is from Alexandria. This, apart from the question of distance, is a most important point, as, during the previous year, 748,640 lb. of imported root, as compared with 261,911 lb. of the local product, was transported to Johannesburg.

A survey of twenty-one farms in the Alexandria district shows that the cost of production of chicory root is 8s. 2d. per 100 lb. (Table VIII). If railage is compared with the cost of production we find:—

Railage per 100 lb. to Pretoria: 4s. 2d. or 51 per cent. per production costs.

Railage per 100 lb. to Johannesburg: 4s. 1d. or 50 per cent. per production costs.

Railage per 100 lb. to Durban: 3s. 3d. or 39.8 per cent. per production costs.

Railage per 100 lb. to Capetown: 3s. 1d. or 37.8 per cent. per production costs.

Comparing the costs of transport with the value of the product, calculated at the average rate of 18s. per 100 lb. at Alexandria, we find:

Railage to Pretoria: 4s. 2d., or 23 per cent. of the value of the product.

Railage to Johannesburg: 4s. 1d., or 23 per cent. of the value of the product.

Railage to Durban: 3s. 3d., or 18 per cent. of the value of the product.

Railage to Capetown: 3s. 1d., or 17 per cent. of the value of the product.

It should also be noticed that at present not even half of the total chicory consumed in South Africa is produced locally. The local product is now nearly as good, and there is no reason why it should not be quite as good as the foreign product, nor is there any reason why South Africa should not meet her own requirements. The imported chicory now consumed in Capetown, Port Elizabeth, East London and Durban is not conveyed over the South African Railway lines, but if the South African demand is met ultimately by the local product, the Railway Administration would also benefit, and reduced rates would probably be more than justified by increased traffic, as is now apparently the case so far as the imported article is concerned.

#### RAIL CHARGES ON MANUFACTURED CHICORY.

The railage on chicory, imported and local, is charged at Tariff Rate No. 2. South African products, however, receive preferential treatment, in that the port tariff from the port nearest to the destination, which is subject to a minimum rate of 1½d. per ton per mile, becomes operative.

This means that chicory manufactured in the Union receives preference over the South African Railways in accordance with the following table:—

TABLE XV.

*Railage on Local and Imported Ground Chicory in pence per 100 lb.*

From.	To Pretoria.		To Johannesburg.		To Bloemfontein.		To Kimberley.		To Standerton.	
	Imported.	Local.	Imported.	Local.	Imported.	Local.	Imported.	Local.	Imported.	Local.
Alexandria.....	143	88	140	92	112	91	115	101	148	86
Durban.....	105	88	103	92	105	91	117	101	88	86
Capetown.....	148	88	145	92	130	91	121	101	152	86
Johannesburg...	12	12	—	—	37	37	41	41	20	20
Pretoria.....	—	—	12	12	40	40	45	45	24	24

In no case is the railage on the local article higher than that on the imported article, and in most cases it is considerably less. Nevertheless, it should be borne in mind that in practice the local product has little advantage in comparison with the imported article. The coastal towns do not pay railage on the latter, and Johannesburg, Pretoria, Bloemfontein, and other inland consuming centres usually pay the same railage on the locally manufactured product from Alexandria as on the imported article from the nearest port. The local product, therefore, is on the same footing as the imported one, but does not actually receive any preference. This will be clear from the following table:—

TABLE XVI.

*Railage on the Imported and Locally Manufactured Products.*

Johannesburg.		Pretoria.		Durban.		Capetown.	
Imported from Lourenco Marques.	Local from Alexandria.	Imported from Lourenco Marques.	Local from Alexandria.	Imported from Lourenco Marques.	Local from Alexandria.	Imported from Lourenco Marques.	Local from Alexandria.
d. 92	d. 92	d. 88	d. 88	d. —	d. 48	d. —	d. 45

A comparison between the railage on ground chicory and the cost of production is difficult, but, so far as the selling price is concerned, it may be mentioned that the railage from Alexandria to Johannesburg comes to 23 per cent. of the selling price in Alexandria, when the chicory is packed in bags, and 18 per cent. when packed in 25 lb. tins. Forwarded from Durban to Johannesburg, the railage comes to 15 per cent. of the selling price when the chicory is packed in bags, and 14 per cent. when packed in 56 lb. tins.

## CHAPTER IV.

## MARKETING.

## VARIOUS METHODS OF MARKETING.

No special attempt was made to study the marketing of chicory. In the course of investigations, however, many points of importance presented themselves, and a few remarks on this matter may perhaps throw a little light on the difficulties which producers have to face.

The earliest method of marketing was to sell the root before the seed was planted. This could only be done by manufacturers contracting to take the whole crop at a fixed price. The contract system was necessary because the market was very unstable during and immediately after the Great War. The producer, as well as the manufacturer, favoured the contract system, because the former was averse to putting labour and capital into a product for which the

market was uncertain, and the latter wanted the assurance that he could count on a more or less constant supply of chicory root.

There were, however, many difficulties in the way. If in any year the price was higher than the contract price, the contractors to the manufacturers usually had no chicory, and if the prices were lower, they had a surplus. The result was that the manufacturer was always the loser, and this system gradually disappeared.

After the disappearance of the contract system, the agents, by whom contracts were originally entered into, started buying chicory for the manufacturers from the producers during the harvest season, with the result that in favourable seasons the competition amongst producers became so keen that chicory was sold at ridiculously low prices. Everybody was afraid of being left stranded with the root. The producers, however, soon realized that the matter could not so continue, and the Alexandria Chicory Growers' Co-operative Association was founded as a means of solving the problem.

The founding of the co-operative society was a further step in the development of marketing methods. The main function of the association was to reduce competition among producers. Prices were fixed and all members had to sell through the Association. Up to the time of survey, approximately 100 out of a total of about 140 producers were members of the co-operative society. On the whole, the Association has been a success. The greatest difficulty, however, is presented by the method of selling the products. Under this system, it happens that certain members sell off their produce and get paid, and others have to wait for the opportunity (sometimes months) to sell, which causes dissatisfaction among members. A further source of dissatisfaction was the fact that non-members, who were always aware of the Association's prices, undersold the latter to some extent, with the result that they disposed of their chicory root before members could get the opportunity to do so. Many members of the Association are not in a position to wait for their money, and a solution of this problem is therefore necessary.

An attempt is now being made to borrow money in order to make advances on chicory root to members. To ensure success it is necessary—

- (1) that the root should be pooled and delivered at the Association's shed before an advance is made;
- (2) that the root be graded in first, second and third grades by a competent man appointed by the Association. At present, hardly any distinction is made as to quality, and all root is sold at the same price;
- (3) that an advance in proportion to the quantity of root delivered at the Association's shed be made to those members who require it. The money for the first advance would have to be borrowed, but as soon as root is sold and money for further advances is available, the sum should be divided pro rata among members in the form of monthly advances until the whole crop is sold;
- (4) that the executive of the Association have a fixed procedure regarding prices. An idea is prevalent, to-day, that prices of products could be fixed arbitrarily, provided all producers co-operate. This is not correct. Prices are determined by supply and demand, and their variation. If

prices are fixed at too high a level, the sale of the products would suffer. Producers would do better by adopting a system of collective bargaining than by attempting to introduce a system of fixed prices. Accorded reasonable treatment, the manufacturers would soon take up a sympathetic attitude towards the local product and assist in eliminating the imported article from the South African market;

- (5) that the Association make it its duty to improve the South African product in every possible way.

At the moment, chicory is a monopoly of the Alexandria farmers. Unfortunately, there are some producers who have not yet become members of the Association, and a special effort should be made to induce them to become members. If this were done, the Alexandria chicory growers would be better able to obtain the best results from the labour and capital invested in chicory-growing.

#### QUALITY OF THE SOUTH AFRICAN PRODUCT.

Judging from the results of investigations and the opinion of the manufacturers, it is evident that the local product could be of the same high standard as the imported article, provided sound production methods are followed. Most manufacturers do not import chicory root when the local product is obtainable.

Nevertheless, it cannot be said that there are no objections to the local product, although they may to some extent be due to prejudice. The housewife who blends her own chicory and coffee apparently prefers the imported article. At present, there are two brands of imported ground chicory that are very popular in South Africa. The fact that there is hardly any variation in the quantity of chicory imported, in spite of the high duty, proves this. (Table XI.)

This prejudice is no doubt mainly due to the scarcity of chicory that existed during the Great War, when substitutes were used. One substitute, known as *Boscia Albitruncata* ("Witgat") root did the local product a great deal of harm. Consequently, the retailer prefers imported chicory to the local article, and it will take time to overcome this prejudice. It is hoped at the same time that the South African product will in the near future capture a considerable proportion of the retail business, especially when more propaganda is made.

Manufactured chicory is used mostly for blending with coffee. Only a small quantity is sold as ground chicory. The manufacturer, although satisfied with the product, complains that the chicory root is sometimes woody, and if this is manufactured, the final product shows many white spots and also lacks the necessary strength and weight.

The cause of this may be inferior seed, in which case the root does not possess the requisite fine quality, and soon runs to seed. Woodiness is caused mainly by leaving the root too long in the ground after it is ripe. If the root remains in the ground too long, it becomes fibrous even if it does not run to seed, and the final product has a light colour and does not possess the correct weight. Under no circumstances should root be used which has already run to seed.

Owing to the fact that the root is not washed after it is ploughed up, the local product is not so clean a white as the imported article.



Manufacturers complain, further, that the root is usually not so evenly graded as the foreign product.

#### METHODS OF IMPROVEMENT.

(a) *Fertilizing*.—In the case of the farms visited, manures or fertilizers were used only to a limited extent in the production of chicory. The necessity of manuring is not realized. Experiments on the Government experimental farm, Winkelspruit, in 1917, showed a yield of 6,532 lb. per acre on unfertilized ground, while, with the use of 120 lb. concentrated super-phosphates, it was 7,992 lb. This, in accordance with present prices, would increase the yield per acre by £14. 12s. As already explained (page 14), the yield per morgen makes little difference to the total cost of production per morgen. Every effort should, therefore, be made to increase the production per morgen.

(b) *Harvesting*.—The plant should be well looked after from the start, and should be kept free from weeds. It is, however, of the greatest importance that the root should be ploughed up at the correct time. In order to compete properly with the foreign product, this fact should never be lost sight of. The plant takes from five to six months to ripen, and the great secret of good root is to take it out as soon as it is ripe. It is said that the root is not subject to any deleterious effects so long as it does not run to seed, but this is incorrect, because, if the root is not taken out immediately it is ripe, the manufactured product suffers. The root not only increases in size, but loses weight and becomes fibrous. Often, farmers do not harvest at the right time, on account, it is said, of the ground being too hard. It is, however, much better to harvest at the right time than to save money on plough shares.

(c) *Drying*.—There are two methods of drying. The first is the natural method by means of the sun. The second is the artificial method by means of kilns. The cutting up and treatment is the same in both cases. In the first case, the root is placed on platforms, and takes from five to eight days to dry. This process is very slow and risky, as rain and dew are detrimental to the root. Sun-dried chicory root has a better appearance than kiln-dried root, but can as a rule not be dried to the same extent. Consequently, small use is made of the natural method for commercial purposes.

Artificial drying, used almost exclusively for commercial purposes, involves a number of unsolved problems. There is, e.g. (1) the cleaning of the root; (2) the cutting up of the root into small pieces of equal size, as also its grading; (3) the correct type of kiln; and (4) method of heating, and correct temperature.

In no case is the root washed before it is cut up and dried as is done in the case of the foreign product, which is probably to be accounted for by scarcity of water during harvest time and extra cost of labour. If the root is not washed, it must necessarily carry with it a certain amount of sand to the manufacturer; moreover it is never as white as it should be. Machinery for the washing of chicory root exists, but as long as the present system of every farmer drying his own chicory root continues, the purchase of machinery for this purpose will be rendered practically impossible.

Usually the roots are conveyed to the kiln by waggon, loose or in bags. There, the root is cut into thin slices with a chaff cutter. The cut root, in slices of different sizes, is then graded, by means of

wire-netting me essential because the smaller pieces would not be properly dry. After the root has been dried, and before putting it into bags, it should be graded again to enable the manufacturer to obtain an evenly roasted product.

Although grading for size is fairly common, it is not done in all cases, and this is one of the reasons why the local product is often criticized. The requirements of the manufacturer should always be met, and producers would be well advised to avoid carelessness in this respect; it should be borne in mind that manufacturers can obtain their supplies from other countries.

The present system of cutting and grading is apparently antiquated. It demands, incidentally, a tremendous amount of labour, because root should, amongst other things, be graded before and after drying, bags must be marked and the manufacturer again has to crush the larger pieces before grinding takes place. It is desirable that the root should be immediately cut up into small pieces about  $\frac{3}{4}$  inch square. This will render grading unnecessary, and facilitate drying, roasting and grinding at the factory.

The chicory farmer generally has difficulty in constructing a suitable kiln for the drying of the root. It is customary to erect a building or kiln of approximately 15 feet by 20 feet. Such a building is high enough to enable two or three layers to be dried simultaneously. A hearth is then erected on the floor of the kiln, so as to heat the whole of it. In the roof of the hearth, openings are usually left to distribute the heat.

The main objection to this system is that it is practically impossible to regulate and maintain the heat at an even temperature in the kiln. Another objection is that the smoke, passing over the chicory root, injures its quality. A third difficulty, by reason of its being impossible to regulate the heat, is that the kiln becomes overheated, and the root is not only dried but it is also burnt. This chicory, already partially burnt, is then mixed with the ordinary dried root and forwarded to the manufacturers. When this mixture of dried and burnt root is placed in the roaster of the factory, the partially burnt portion is roasted to a cinder before the rest is sufficiently roasted, thereby causing loss and reducing the quality of the product.

These problems need, of course, to be solved, but it should be apparent that they do not fall within the scope of this discussion, therefore, they have merely been mentioned here.

There arises, however, the question whether it may not be possible for the co-operative society to solve the difficulty connected with the washing, cutting, drying and treatment of the root. In such case, the society could erect a suitable kiln or kilns and provide proper equipment for washing and cutting the root. Such a kiln should be centrally situated or otherwise at the nearest railway station. The wet root is then delivered at the kiln where it is treated further.

It should be noted that it costs the producer almost £100 to build a kiln. The drying of the root, which is an important item in the cost of production, works out at to 2s. 3d. per 100 lb. dry root, or over 27 per cent. of the total cost. Economy in this respect is, therefore, essential. The fact should also be borne in mind that the results, in spite of high costs, are still far from satisfactory.

These processes of washing, cutting, and grading, could, of course, be supplemented by roasting and grinding, but it would, however, whether such an encroachment on the territory of the present manufacturers, who are clients of the Association, is desirable, because the Association would, in such case, come into direct competition with its most important clients, who would, in the first instance, be in the position to do the Association a great deal of harm by boycotting it. In the second place, the railage on the imported root is nil in the case of coastal towns, and, in comparison with the rate on the local product, low in that of inland towns. In conclusion, attention must be drawn to the fact that a good market for the local product already exists, while a market for the Association's new product has still to be found.

It is evident, all these facts considered, that further inquiry into the matter is not only desirable, but essential.

Grading for quality is, in the history of chicory, almost unknown. Although some producers are more careful and methodical than others, their products do not, apparently, command a better market price. Unless improvement in this respect is effected, the prospects of a rapid and general improvement of the product would be small. Negligence on the part of the producer should be punishable, otherwise there can be no hope of improvement. The manufacturer and the co-operative society are equally guilty, because the former usually pays one price for all root, and the co-operative society fixes a price for all its members.

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