University of Cambridge,
Department of Agriculture

Farm Economics Branch
Report No. 9
(*Issued July*, 1928)

100 farms
by the costing method

Sugar Beet in the Eastern Counties, 1927

Being an Investigation into the Financial Results obtained on One Hundred Farms and Some of the Factors Influencing Them

BY

R. McG. CARSLAW, M.A. (Dip. Agric. Econ.)
C. BURGESS, B.A. (Dip. Agric. Econ.) and
G. Ll. ROGERS, M.A. (Out-door Representative).

WITH A FOREWORD BY
J. A. VENN, M.A.
(Fellow of Queens' College, Gilbey Lecturer and Advisory Economist).

W. HEFFER & SONS LTD, CAMBRIDGE
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Foreword

"Sugar, Mr. Speaker . . . . . who now dares to laugh at Sugar?"
—WILLIAM PITT.

"AT a dinner recently given by the town of Amiens to the King of France, was placed on the table opposite to His Majesty an immense column, composed of sugar, manufactured from beet-root at Franvillers, near Amiens. The column consisted of four different qualities of refined sugar, and crystals of raw sugar formed the pedestal." These words, extracted from *The Times* of October 22nd, 1827, afford yet another example of the repetition of agricultural history. Our blockade of France had caused the introduction therein, and rapid spread, of this new crop, fostered and controlled, as it was, by the State. A hundred years later, consequent upon another European conflict, we find our own country subsidising the establishment of sugar beet. In 1927 more than four millions of the subjects of King George the Fifth were provided with home-produced sugar—if no royal banquet has thus been served, doubtless His Majesty has also partaken of this commodity. In the intervening century the crop had spread throughout Europe; protected by subsidies and encouraged by bounties, it had been the subject of international conventions and also of international disagreements; incidentally, France lost her Sovereign but retained her sugar beet. Finally, produced in large quantities in every country except our own, it developed into a serious competitor to cane-sugar. In these islands, however, it seemed as if the attempts made by private persons to popularise it were destined to meet with the same lack of support as was experienced by the eighteenth century pioneers when advocating other innovations in the way of root crops, e.g. turnips. It was only when the Government itself assumed responsibility, by fostering both the growing and the manufacturing of the product, that the successful issue was achieved. Yet the demand for sugar was almost unlimited, and no war-time restrictions irritated the population more than those which drastically curtailed its consumption of sugar and simultaneously demonstrated its dependence for supplies on enemy countries. We consume little short of two million tons of sugar per annum, equivalent to upwards of one hundred pounds per head; all ages and all classes of the community look to it for their sustenance and their delectation. This is the product, for the supplies of which, only a few years ago, we were entirely dependent upon overseas resources; already we produce more than one-tenth of our needs. In these circumstances no action of an economic character undertaken by the State in those difficult post-war years was, it will be agreed, more justified than that

involved by the passage of the Sugar Beet (subsidy) Act. Unfortunately, from the very nature of the case, the financial aspects of the problem had to be settled in the virtual absence of *data* relating to the cost of producing the crop. For, at the time that the Act in question became law, the most recent authoritative publication upon the subject was the "Report on Experiments in the Cultivation of Sugar Beet in 1911" (Cd. 6162, 1912). It need not be pointed out that an investigation into what were in effect purely experimental samples of beet for one particular season in a pre-war year could hardly afford an approximate indication of the economy of the commercial production of the crop under post-war conditions. Quite recently, however, the Ministry of Agriculture's "Research Monograph," No. 3, prepared by Messrs. Bridges and Dixey, of Oxford, and a later work by the same writers, entitled "Sugar Beet," covering respectively the seasons 1924–5 and 1925–6, have made available a considerable body of information relating to both the cultural and financial aspects of beet production in England. In no district of Great Britain, however, is this crop of more importance to the farmer than in the arable districts of the Eastern Counties, where more than two-thirds of it is produced, and where are naturally situated the majority of the factories. No excuse, therefore, is needed for the publication of an inquiry confined, in geographical range, to what is officially designated "The Eastern Counties Province," for nowhere else are the natural conditions so favourable, or the potentialities of the crop so great, and in no other area does the farming community stand in need of such assistance as can be derived from the "beet policy." At first the main difficulties associated with the introduction of sugar beet into East Anglia were cultivational in character, but here experience has been rapidly acquired, and now the most important questions to be solved are those relating to economics and finance, e.g. labour, transport and so on. Here, then, is apparent the value of this *Report*, for it covers, for the first time on a really large scale, the complete history of a season's crop (from the preliminary preparation of the soil to the arrival of the roots at the factory) grown in the heart of the most prolific area; on statistical grounds it represents, also, the largest "sample" that has ever been made. Messrs. Carslaw and Burgess, together with Mr. G. Ll. Rogers, are, in their respective spheres, to be heartily congratulated upon carrying through to a successful issue so important and difficult an undertaking.

Reference should perhaps be made to what appear to be some of the more important features emerging. Thus, most readers will turn at once to Table 12, which gives the average cash and net over-all profits, and will then doubtless attempt to calculate their own possible returns in future years as the subsidy declines. Here the contents of the last pages will assist them, and in the same section they will find much interesting material relating to the respective positions occupied by the grower, the manufacturer and the consumer of beet sugar. Certain portions of the work deal with entirely new aspects of the problem, viz. the relationship between the size of fields and

cost of production per acre, the financial results attaching to dunging and subsoiling and the large scale investigation into the effects of varying dates and rates of drilling seed. The season of 1927 was, however, not normal, and it is, therefore, doubly fortunate that the inquiry is being repeated during the current year on the same lines and on the same scale; taken together, the two years, which are bound to be variable in character, should provide results of very great value alike to land-owners, farmers, manufacturers and economists and the other numerous classes of persons interested financially or otherwise in the future of the new crop. To the numerous individuals, especially the growers, who have made possible the appearance of this publication, may I tender, on behalf of the Department of Agriculture, most sincere and grateful thanks? To them it must often seem a thankless task to furnish information upon seemingly unimportant matters for month after month, and then to be asked for more, but it is to be hoped that they will discover in the contents of these pages some slight return for their kind co-operation.

J. A. VENN.

Some Observations on the Position of Beet Growing in the Eastern Counties

It is only when an endeavour is made to generalise on the practical aspects of sugar beet growing and to summarise the economic factors of importance in its production that a full realisation of the difficulties and dangers of such a proceeding becomes apparent. For, even within the limits of the present investigation, examples may be found which appear to give the lie direct to any form of recommendation. From the practical man's point of view the main considerations in discussing the economics of sugar beet production appear to be type of soil, cost of transport, supply of labour, capital requirements, and general policy of the farm. So far as the actual growing of the crop is concerned the first of these may seem to be of minor importance, for sugar beet will accommodate itself reasonably well to most soils found in the Eastern Counties Province. On the heavier types, however, there may be a very real difficulty in wet seasons and, in particular, at harvest time, to mention nothing of the possibility of damage to the soil texture. The question of transport is, perhaps, one of the most important considerations, for in the general list of costs this item bulks large, and in many cases makes all the difference between a cash profit or loss.

The importance of the question of labour depends to a great extent on the amount of beet grown. At the best it calls for much skill in organisation during the important periods of haytime, autumn sowings and autumn threshings; at the worst it may result in grave neglect of the farm routine. Generally speaking, there appears to have been no very great demand for, or difficulty in obtaining, casual labour even with the 1927 acreage, although it is feared that in too many cases outside labour has been casual in more senses than one. The matter of labour presents so many aspects that controversial topics can hardly be avoided. In the first place hand labour on the crop calls for considerable skill and even more care. The poor "plant" rendered worse and the good "plant" rendered indifferent as a result of careless hoeing and singling is probably the most common cause of disappointment and financial loss to the grower. Whether piece-work is to be preferred to day-work depends a good deal upon the amount of supervision possible, and also on the type of workman employed. The lesser cost per acre achieved by piece-work has in many cases, on account of indifferent hoeings, proved more costly in the long run than day-work. It is not necessary to discuss wage rates except, perhaps, to comment on the wide variation observed in piece-work rates between different districts. Generally the labourers appear satisfied

with the amount they are able to earn on the beet crop, and in quite a number of districts it has provided the means for women and children to supplement family incomes.

Sugar beet growing calls for considerable capital outlay, especially in labour and manures, and the high costs incurred might be a serious handicap to its production were it not for the system followed by the factories of making cash advances where required. This convenience has undoubtedly weighed a good deal with the farmer when deliberating on his policy. It is to be hoped that the practice will be continued in the future, and extended where possible to other farm products. The small capital outlay on implements incurred by some growers is a very minor matter. It would seem that those special beet harrows and lifters now on the market are, on the whole, satisfactory, but that further developments in spacing drills, hoes and harvesting machines would be very welcome provided that their purchase did not entail much expense.

In this summary it is impossible to enlarge upon the position of sugar beet in the policy of other than the general corn and stock farmer. On those farms where a "cash" fallow crop (such as potatoes or brussel sprouts) is normally taken, beet will become an ever more doubtful proposition as the price declines. On the general farm, however, sugar beet will in future absorb part, if not all, of the fallow shift and thus do much to lighten cleaning costs. When the subsidy has expired it appears that the decisive question in the grower's mind may be, not how much loss will be incurred, but by how much the loss on beet will be less than that on any other form of fallow crop. In this connection it is obvious that both the direct and indirect returns from beet growing must be considered as well as its effect on the general policy of the farm. Beet tops provide excellent sheep-keep, of which fact evidence is given in Appendix H, while the quantity available appears to be greater than is generally believed. The introduction of beet into the rotation does not seem to have affected in any way the stock-carrying capacity of holdings, and in this connection it may be mentioned that the preferential rates available to the grower for the purchase of pulp enable him to obtain an excellent foodstuff at a reasonable price. It is agreed everywhere that corn crops immediately following beet invariably do well, but whether this is due to the manurial or cultivation values is uncertain. No doubt both exert an influence, and certainly on the lighter barley lands the deep cultivations render available a greater moisture area to the advantage of the following crop.

It is certain that farming conditions do not always lend themselves to an alternative cash fallow crop to sugar beet and that many farmers will therefore retain the advantage of at least some immediate cash return from their necessary fallow operations. On the presumption that beet will replace some of the "root" break it is legitimate to assume that much greater attention will in future be paid to the economic utilisation of pulp and tops than has been done in the past. There is no reason to believe that any shortage of stock

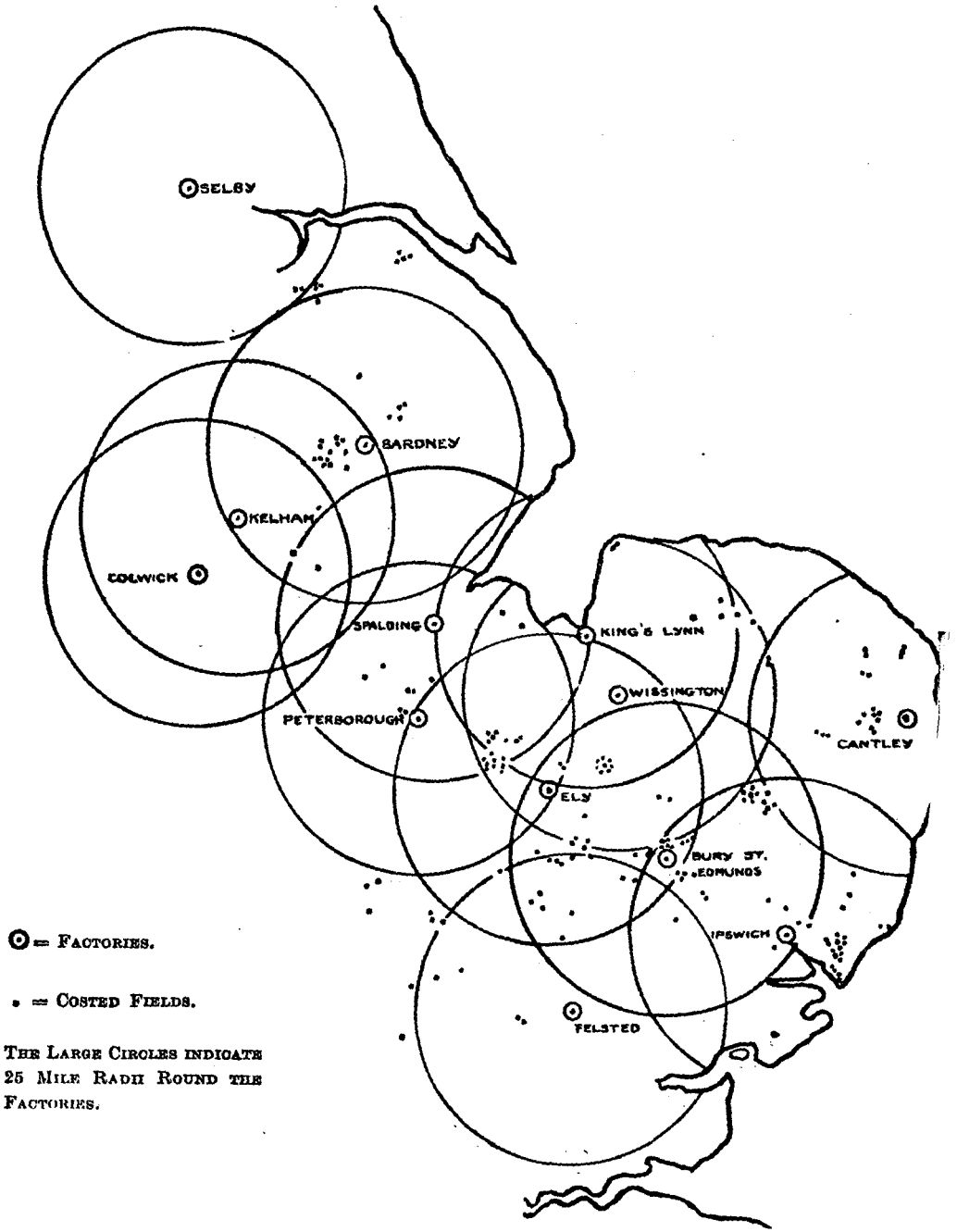
food will result from such a policy, although some slight modifications in rationing methods may be necessary. As stated above, even with the existing brief experience, and under probably abnormal conditions, no reduction in the stock-carrying capacity of farms has been evidenced.

Up to 1927 the constant occurrence of beet following barley would seem to indicate that in many cases the crop has been substituted for seeds, but it must be remembered that the high contract price, coupled with the general economic conditions of the period, tempted many growers to concentrate on beet to the exclusion of all other considerations. It is possible that ill effects from such a policy will be felt for some years to come. But sugar beet (grown rationally) tends, without doubt, to a general uplift both of farming methods and soil fertility. One is forced to ask, however, to what extent other crops would show to equal advantage if they also were cared for and nourished as this pet child of the rotation?

As with other crops, quality of seed is of the greatest importance in sugar beet production. Up to the present this country has been almost entirely dependent for its supply on Continental sources, but the production of beet seed is now becoming quite an extensive venture in England. Factories have been criticsed for failures alleged to be caused by seed of inferior quality supplied by them. It is impossible to believe, however, that the factories have not done all in their power to ensure that only seed of the highest grade available should be issued to growers, for the interests of the factory demand the highest possible sugar content. It is pleasing to record that last season proved the good qualities of English-grown seed, and in this connection it may not be out of place to suggest that factories should be more specific in their description of varieties of seed made available to the grower. It is usual for English-grown seed to be defined only by the term "English-grown," whereas, if the name of the grower, or the variety, was specified, this would at least definitely mark down the source of origin.

Comparisons of English and Continental yields and methods of production have been made in recent years *ad nauseam*. It appears that so far as soil and climate are concerned Continental growers are in no way more favourably placed than English growers, and that the factors of seed, manuring and inter-cultivations form the main causes of the difference in yields. Inspection over a wide area of Eastern England during the past season certainly emphasised the necessity for care in cultivations, particularly in the singling and hoeing operations. With regard to manuring, it must be remembered that information on this matter is still decidedly vague in England. Instance after instance might be quoted where entirely divergent advice has been printed, not only in the same agricultural paper, but also on the same page. Many growers do not discriminate between one locality and another, and accept such advice as being universally applicable. The manuring suited to all the combinations of soil and weather factors experienced even in the Eastern Counties has not yet been discovered.

DIAGRAM I.



Distribution of Costed Fields in Relation to the Factories.

CHAPTER I.

1. INTRODUCTION

THE enquiry, the results of which are given in the following pages, was commenced in the autumn of 1926, and relates to the production and marketing of the 1927 sugar beet crop in the Eastern and North-Eastern Divisions of England. The investigation covers exactly 100 farms, of a total area of 42,993 acres, distributed throughout Norfolk, Suffolk, Essex, Hertfordshire, Cambridgeshire, Bedfordshire, the Isle of Ely, the Soke of Peterborough, and the three Divisions of Lincolnshire. Those few farms situated in Lindsey (i.e. outside the Cambridge Advisory Province) have been included in this investigation owing to the fact that the beet produced on them was delivered to factories within the Province. That these 100 farms form, at least in major characteristics, a comparatively representative sample of the conditions found in the Eastern Counties, is shown below.

TABLE 1

COMPARISON OF MAJOR CHARACTERISTICS OF COSTED FARMS WITH NORMAL CONDITIONS

	Arable area expressed as a % of total area under crops and grass.	Rent per acre.	Density per 100 acres.	
			Regular labour.	Working horses.
E. and N.E. Divisions* ..	69	29/-	3·2	3·5
100 Costed Farms†	75	29/5	3·8	3·2

The total area of beet grown on these 100 holdings in 1927 was just over 3700 acres, representing the high figure of 11·5 per cent. of the arable land. A similar calculation for the two preceding years shows that the area under beet on the same farms expressed as a percentage of total arable was 4·5 and 8·9 per cent. in 1925 and 1926 respectively. Of the 3700 acres of beet grown in 1927, exactly 2303 acres (or just over 1 per cent. of the total area under beet in England and Wales) is represented in the present enquiry. This acreage involves 182 separately costed fields, having an average area of 12·65 acres per field. The county distribution of the farms, fields and acreages is given in Table 2 together with the official figures of the total area under beet in each county in 1927:—

* *The Agricultural Output of England and Wales*, 1925.
† See Appendix A.

TABLE 2

COUNTY DISTRIBUTION OF COSTED ACREAGE

County.	Covered by the present enquiry. Farms.	Fields.	Acres.	Total acreage under sugar beet in 1927.*	Costed acreage expressed as a % of total acreage under beet.
Suffolk	25	52	773½	35,862	2·2
Norfolk	19	43	541¾	51,444	1·1
Isle of Ely	10	22	277½	15,904	1·7
Kesteven (Lincs.) ..	11	16	168	11,788	1·4
Lindsey (Lincs.) ..	8	15	134½	13,776	1·0
Cambridgeshire ..	7	11	182½	7,098	2·6
Essex	5	6	45	9,925	0·5
Soke of Peterborough	4	6	38½	1,866	2·1
Holland (Lincs.) ..	4	4	95½	6,368	1·5
Hertfordshire ..	4	4	30½	1,948	1·6
Bedfordshire ..	3	3	15¾	1,203	1·3
Totals	100	182	2303	157,182	1·5
England and Wales				222,566	1·0

The factories to which the costed beet was sent were Felsted, Peterborough, Bardney, Colwick, Bury St. Edmund's, Wissington, Cantley, Spalding, Ely, King's Lynn, Ipswich, Kelham, and Selby. The situation of the costed fields in relation to the factories concerned is shown in Diagram I (page xii).

It is perhaps not out of place to emphasise the fact that the *data* given in the Appendices of this publication refer to the beet crop drilled in the spring of 1927, and marketed between September, 1927, and January, 1928. The receipts, profits and losses are therefore governed by the prices ruling during the last year of the full subsidy. This fact must constantly be borne in mind when considering the possible future developments of the industry under a diminishing and (eventually) expiring subsidy.

2. METHOD OF OBTAINING STATISTICS

Previous economic investigations of sugar beet production have generally been based on figures collected partly by the survey system and partly on costs prepared by different investigators using dissimilar accounting methods. The present enquiry is based entirely on costs prepared on uniform principles, the basic *data* having been obtained from weekly return forms filled in by each individual grower concerned. A copy of this return form is shown in Diagram II, and it may be mentioned in passing that over 3200 of these forms were completed and returned to this Department in the course of the enquiry. It will be noted that the returns asked for are of a somewhat detailed nature, viz. the actual hours of time spent on the crop by workers, horses and tractors, together with details of piece-work, steam-tackle, seeding and manures. It may be argued that, from the very nature of the statistics required, those

* *Agricultural Statistics*, 1927.

DIAGRAM II.

S. B. 26/27

FARM ECONOMICS BRANCH,
SCHOOL OF AGRICULTURE,
CAMBRIDGE UNIVERSITY.

Name _____

Address _____

WORK DONE FOR 1927 SUGAR-BEET CROP DURING WEEK ENDING _____ 192

Please enter in as much detail as possible. Ordinary time to be entered as hours, piece time as money. (If no work has been done write "none" across sheet.)

Ref. No.

Description of work done	Numbers employed			Ordinary time. Hours worked (make an entry)	Piece work £ s. d.	Name of field on which work is being done
	Men	Horses	Tractors			
1st day						
2nd day						
3rd day						
4th day						
5th day						
6th day						

Steam tackle used during week

Name of field	Description of work done	Acres done	Per acre: Cost of tackle £ s. d.	Per acre: Coal used Cwts.	Total cost (including coal) £ s. d.

Seeding and manuring during week

Name of field	Acres under sugar-beet	Seed: Variety	Seed: Amount drilled lbs.	Dung loads	Total Manures applied: Nitrate of Soda tons	Nitrate of Soda cwts.	Sulphate of Ammonia tons	Sulphate of Ammonia cwts.	cwts.	cwts.	tons	cwts.	tons	cwts.
Cost per ton (including cost of carriage and carriage)					£		£		£		£		£	

How is crop looking? _____

Weather conditions affecting sugar-beet crop during week _____

Diseases or pests apparent _____

Any other remarks _____

growers who co-operated represent an above average sample of efficient farming. While readily admitting that this criticism is possibly correct, it is of significance to note that, while a farmer who is willing and able to undertake the arduous work of making such returns is in all probability an efficient manager, the reverse does not necessarily hold good. But the fact that the yield of beet from the costed fields averaged 7·7 washed tons per acre, while that for the whole of England and Wales averaged only 6·5 tons, seems to support the suggestion that the costed farms are by no means below average in the efficiency of their management, although part of this difference in yield is undoubtedly due to the uneven incidence of fen acreage in the two averages.*

The weekly returns referred to above, while supplying the basis of the costing material, covered by no means all the statistical *data* necessary to complete the investigation. Personal contact was made and maintained throughout the period covered by the enquiry by frequent visits to the co-operating growers by the Branch's Routeman, Mr. G. Ll. Rogers, M.A., whose special qualifications alone made possible a satisfactory completion of the work. Not only were queries arising from the analysis of the weekly returns checked and verified in this way but, in addition, most of the details made available in Appendices A and B were collected on these periodic visits.

The crop yield *data* were obtained in all cases from the factory advice notes sent by the factories to the growers concerned, a matter involving the analysis of some 3330 consignments. The figures† giving unwashed and washed yield, percentage tare and sugar content, are therefore as accurate as it is possible to get them under conditions of practice. The yield of tops was, in the majority of cases, estimated by the growers, but where this information was not made available the Branch's Routeman assessed the quantity.

3. COSTING METHODS

The weekly returns made by the co-operating growers were analysed on an "operation basis," thus allowing the final costs to be shown in very considerable detail.‡ Certain estimates were, however, necessarily introduced into the costs. These were (*a*) the cost per hour of horse labour, (*b*) the cost per hour of tractor work, (*c*) the proportion of establishment charges to be debited against the crop, and (*d*) the cost per hour of manual labour other than piece-work. In deciding upon these figures the results of earlier cost investigations were taken as a guide.§

(*a*) Horse labour was charged at 7½*d.* per hour on medium to heavy soils, and 7*d.* per hour on all other soil classes. This sum includes an allowance for depreciation of and repairs to implements.

(*b*) Work done by the farm tractor was charged at the rates of 3*s.* 3*d.* per hour for ploughing and 2*s.* 9*d.* for cultivating, these figures excluding the

* See page 16. † See Appendix D. ‡ See Appendix E.
§ See Farm Economics Branch Reports, Nos. 1, 2, 3, 4, 6 and 8.

driver's wage. Where a tractor was hired, however, the actual cost was charged against the crop.

(*c*) The adoption of a figure to represent establishment charges involved a breaking away from the costings principles generally adopted for "full cost" enquiries by Advisory Economists throughout England. Under these principles, it was agreed to allocate unclassified expenses (e.g. road upkeep, ditching, hedging, paint, nails, bank charges, stationery, etc.) to productive departments (i.e. departments producing marketable commodities) in proportion to the amounts of direct manual labour expended on them. In practice this method appeared severely to handicap the sugar beet crop, in the cost of which manual labour figures so largely, for previous and more detailed investigations carried out on the recognised accounting principles burdened the beet crop with approximately eight times the proportion of establishment charges borne by wheat or barley.* So far as the present investigation is concerned a uniform figure of £1 per acre has been adopted to represent establishment charges. This is considerably less than what would have been charged under a full cost system based on the existing principles, and is, in effect, a compromise between the method of allocating establishment charges at a flat rate per acre and the Economists' method of weighting the charge against certain departments only.

(*d*) The cost of manual labour has been assessed at the district wage rates, plus approximately 1*d*. per hour to cover foreman's time, the farmer's contribution to National Health Insurance, perquisites and holidays. Piecework payments and the cost of steam tackle have, of course, been based on actual outgoings.

It must be strongly emphasised here that under none of the cost headings has any allowance been made for interest on the capital involved, for remuneration to the grower for his work as manager or for insurance against risk of failure. Interest on capital, if included in costs, would result in the final total representing not true cost, but cost plus a certain margin of profit. The value of the farmer's time as manager is very difficult to assess, while it is generally accepted that the remuneration to the farmer is at least partly represented by the net profit realised. Insurance against risk of failure is as yet a very hypothetical calculation. In addition, none of these charges is sanctioned by the Inland Revenue authorities, so that their inclusion would give a somewhat unreal and valueless effect to the results. For theoretical purposes, however, it may be taken, by those who are determined that such charges are legitimate, that interest at 5 per cent., remuneration to the farmer at the rate of £200 per annum, and insurance against risk of total or partial failure would add to the over-all average cost shown in Table 11† approximately 6*s*., 9*s*. and 13*s*. (under 1927 prices)‡ respectively, or a total of 28*s*. per acre.

* See Farm Economics Branch Reports, Nos. 3 and 6.
† See page 31. ‡ See page 55.

4. RESIDUAL MANURIAL AND CULTIVATION VALUES

However undesirable it may appear to introduce such arbitrary figures into cost calculations it cannot be disputed that to omit them—particularly in reference to such a crop as sugar beet—would be altogether unwarranted and contrary to facts. To avoid any possibility of confusion, however, all the costs in this publication* have been drawn up in such a way that it is possible to distinguish clearly between actual cash costs and arbitrary additions or deductions representing residual values, and it has been emphasised elsewhere in these pages that cash and net results are best considered, not individually, but together.

Although residual values have been referred to as arbitrary figures, great care has been taken in the present investigation to make them as representative as possible of actual conditions, and a short description of the methods employed might not be out of place. In this connection it may be mentioned that Voelcker and Hall's *Tables of Manurial Values* have been used throughout.

(*a*) *Residual Values brought forward from the preceding Crops.*

These have been assessed on the cropping and treatment of each individual field. In each case the amount charged against the 1927 sugar beet crop is the net amount chargeable and does not include any allowance for possible beneficial effects carried forward to the 1928 crop. In this way when the crop preceding the sugar beet had been dunged, instead of debiting the sugar beet with half the value of the dung and then crediting it with a quarter of the same amount, the net value only has been recorded against the beet. Thus the net amount chargeable against the sugar beet has been put at a figure of 2*s.* per load of dung applied to the preceding crop, or, to give a concrete example, where the previous crop received 12 loads an acre of dung, the sugar beet has been debited with £1 4*s.* 0*d.* per acre net.

Where the preceding crop consisted of roots, which were folded off by sheep, the beet crop has been charged with £2 per acre net. This figure represents a proportion of the cost of the cultivation and cleaning of the root crop, together with an allowance for the manurial value of the folding. Where the 1925 crop (i.e. the crop preceding the crop previous to the sugar beet) was represented by roots folded off by sheep a net charge of 10*s.* per acre has been made against the sugar beet. Where the crop before the sugar beet was a bare fallow a net charge of £2 10*s.* 0*d.* an acre has been made—this sum purporting to represent half the cost of the fallow. After a potato crop which was not dunged the beet has been charged with 15*s.* an acre net to represent both the manurial and cultivation residues. Where the potato crop was dunged the residual value of the dung was added to 10*s.* an acre—it being assumed that the artificial manuring would not be so heavy where dung was applied. Sugar beet after sugar beet was treated in the same way as beet

* Appendices E and F.

after potatoes, except that where the tops were ploughed in or folded off an additional charge of £1 5s. 0d. per acre net has been made.* Where mangolds, which were not dunged, preceded the sugar beet a charge of 10s. per acre net has been brought forward.

In all cases where the sugar beet followed a straw crop which had not been dunged the sum of 5s. an acre has been brought forward. This figure is intended to cover any item that should have been brought forward from the 1925 or 1926 crops as the result of the use of artificial manures in either of those years. In the case of sewage treatment the residual value was put at the farmer's own estimate (i.e. £2 an acre) and, in the one case where a farmer had just taken possession, the valuation figures were used.

(b) *Residual Values carried forward to succeeding Crops.*†

Half the cost of dung applied direct to the 1927 sugar beet has been credited to the crop. The residual values of artificial manures have been carried forward in the proportions set down in the *Tables* published by Voelcker and Hall. Thus two-thirds of the cost of superphosphate, half the cost of kainit and potash salts, and one-third of the cost of fish manures have been carried forward to succeeding crops. In the same way the sugar beet has been charged with only one-sixth of the cost of lime, where this has been applied direct, but, in the case of sulphate of ammonia, nitrate of soda, nitrate of lime and cyanamide, the beet has been made to bear the whole of the cost, because these manures are so soluble that they are of little or no value to succeeding crops. In the case of dissolved bones, half the cost has been carried forward, but for all other bone manures the sugar beet has been debited with only two-fifths of the cost. Half the cost of shoddy has been carried forward. In the case of "patent" manures credit was, as far as possible, allowed according to analysis and not according to their market price.

The task of assessing the residual value of the cultivations done to the sugar beet crop was a difficult one, because there is no standard measure of the value of any operation comparable with Voelcker and Hall's figures for manures and feeding stuffs. Roughly, the various operations done for a fallow crop may be divided into two classes—those which are of value because of their effect on the texture of the soil and those which are performed chiefly with a view to cleaning the land. It is readily admitted that there can be no hard and fast division of operations into these two classes, but in many cases the work is performed with one particular object in view.

In the present investigation the operations which have been chosen as a basis for calculating the residual value (from the cultivation point of view) of this fallow crop are subsoiling, steam tackle, cultivating and horse-hoeing. In dealing with these operations the following arbitrary proportions have been carried forward:—Two-thirds of the cost of subsoiling, half the cost of steam

* See page 8.

† For details of manuring done direct to the 1927 beet crop, see Appendix C.

tackle and three-quarters of the cost of horse-hoeing. In the case of cultivating, a scale based on the number of times the operation was performed, was utilised; thus, once cultivated—nothing carried forward, twice—2*s.* carried forward, three times—3*s.* 6*d.* carried forward, four times—4*s.*, and five times—5*s.* It is not suggested that any one of the items, which, in this way, contribute to the residual value of the cultivations is, in itself, a true measure of the value of that particular operation to succeeding crops, but rather that their combined result gives a total sum which, in the great majority of cases, represents a fair estimate of that value; that, with the present lack of information on this subject, is the most that can be hoped for.

5. VALUE OF SUGAR BEET TOPS

Sugar beet tops have neither a cost price nor (at present) a market price, and the only possible method of assessing their value is by comparison with some similar type of commodity, the price or cost of which is known; as, for example, with dung (from a manurial point of view) and roots (from a feeding point of view).

(a) *Manurial Value.*

The manurial constituents of beet tops and farm-yard manure are shown in the following table:—

TABLE 3

MANURIAL COMPOSITION OF SUGAR BEET TOPS AND FARMYARD MANURE

	Average % composition of sugar beet tops.*	Average % composition of farm-yard manure.†
Nitrogen	0·34	0·6
Phosphate	0·11	0·3
Potash	0·58	0·5

Working on these figures, and taking the unit value‡ of nitrogen as 9*s.* 11*d.*, phosphate as 3*s.* 10*d.*, and potash as 3*s.* 3*d.*, the manurial value of tops is 5*s.* 8*d.* per ton, while that of farm-yard manure is 8*s.* 9*d.* per ton.

It is not suggested that these figures (5*s.* 8*d.* for tops and 8*s.* 9*d.* for farm-yard manure) represent more than the comparative manurial values of tops and dung, for, apart from their making no allowance for mechanical effects, it is hardly possible to value slow acting organic manures by a unitary system based on readily available "artificials." It seems not unreasonable to assume, however, that the relative mechanical values of these two slow acting organic compounds are also represented in some measure by the ratio of 5*s.* 8*d.* to 8*s.* 9*d.* As the cost of dung, calculated on the recognised tables of residual food values, plus straw, is approximately 10*s.* per ton, the tops will be worth, observing the above ratio, approximately 6*s.* 6*d.* per ton. A conservative, but not unreasonably low, figure for the value of tops ploughed-in, is, therefore, 5*s.* 6*d.* per ton.

* Woodman and Bee, *Journal Agric. Sci.*, Vol. XVII, Oct. 1927.
† A. D. Hall, *Fertilisers and Manures.*
‡ *Journal of the Ministry of Agriculture*, Feb. 1927.

An exception to this figure, of sufficient importance to warrant consideration, occurs in the value of tops on fen land. A comparison of the manurial composition of fen tops and tops from other soils shows the inferiority of the former.

TABLE 4*

MANURIAL COMPOSITION OF FEN AND OTHER SOIL TOPS

	% Composition of other soil tops.	% Composition of fen tops.
Nitrogen	0·34	0·31
Phosphate	0·11	0·06
Potash	0·58	0·43

Worked out on the unitary system used above, the manurial value of the fen-grown tops is 4*s.* 8½*d.*, as compared with 5*s.* 8*d.* per ton for tops from other soils. This variation has been allowed for, and fen land tops have been valued, for their manurial effects, at 4*s.* 6*d.* as against 5*s.* 6*d.* for upland tops. This difference is, of course, compensated for in most cases by a larger yield per acre.

(b) *Feeding Value.*

The food constituents of beet tops and mangolds are compared in Table 5.

TABLE 5*

FEEDING VALUE OF SUGAR BEET TOPS AND MANGOLDS

	lb. Dry matter	lb. Starch equivalent.	lb. Digestible protein.
40 lb. Mangolds ..	4·30	2·20	0·28
25 lb. Tops	4·05	2·14	0·36

From these figures it appears that clean tops are almost equivalent to one-and-a-half-times their weight of mangolds. As the cost of production of mangolds is approximately 15*s.* per ton, it follows that the value of tops on a cost basis for feeding is one-and-a-half-times 15*s.*—or £1 2*s.* 6*d.* per ton. This is the value of one ton of *carefully collected and cleaned tops.* In practice, however, the tops will contain a certain amount of "tare," varying according to climatic and soil conditions. In addition, a considerable proportion will, in the case of folding, be trampled into the land or contain so much earth that it will be unpalatable, and, where carted off, many broken leaves will be left behind and the tops well sorted over by the cattle. To these causes of wastage must be added decomposition, which sets in only too readily when the tops cannot conveniently be consumed within a few days. It is difficult to assess the combined result of these causes of loss, because it must vary considerably from farm to farm, but observation suggests that a fair "average" figure to cover this loss might be about one-third, equivalent to a reduction in the value of tops from 22*s.* 6*d.* to 15*s.* per ton.

* Woodman and Bee, *loc. cit.*

The feeding value, then, of a ton of tops which have been managed well is about 15*s*. But sugar beet is a new crop to the majority of English farmers. Consequently the value of this by-product is not yet thoroughly appreciated nor its management efficiently controlled. Cultivation has been concentrated on the production of the root, and it cannot by any means be said that the most has, up to the present, been made of the tops. Further, under some systems of arable farming tops cannot be utilised effectively as a food. In the fens, for example, they can seldom be used to the best advantage, while, unlike mangolds, they have no sale value. Again, tops do not always fit easily into the scheme of farm management. They cannot be stored, like mangolds, until they are wanted—ensilage of tops is, in this country, still in the experimental stage—but must be used as they become available. For these reasons, although laboratory tests and feeding trials show that tops are undoubtedly worth 15*s*. per ton as food, their value has been assessed in the present enquiry at only 7*s*. 6d. per ton. There can be no doubt that this is a conservative figure, for it must be remembered that both the one-third wastage allowed for above, in addition to the tops actually consumed, will have a residual manurial value for which no allowance has been made.

Tops used as food have been valued at the same figure whether they were folded or carted off. Probably there is less wastage where tops are carted off, but any saving in this way will be cancelled by the extra cost incurred (i.e. carting). As in the case of manurial values, fen land tops used as food have been valued at 1*s*. per ton less than upland tops (6*s*. 6*d*. against 7*s*. 6*d*.). The value, both manurial and feeding, of tops on sewage farms has been taken as similar to that of fen-grown tops.

Appendix H gives the opinions expressed by the 50 growers who commented on the value of tops both as a food and as a manure. It will be noticed that not one of these comments is derogatory, and typical estimations of their value are "£1 per acre," "5*s*. a load," "£2 an acre," "more than £2 an acre," "equal to white turnips," "equal to 10 ton crop of swedes," "worth more than 7 loads of rotted dung," etc. Although their value as a food was appreciated by many growers, tops were ploughed in on no less than 101 out of 172 fields. On 17 more fields part was carted off and part ploughed in, and on 10 fields part was folded and part ploughed in. All the tops were carted off from 13 fields, and all were folded on 28 fields. On 3 fields the tops were partly carted off and partly folded.

The estimated weight of tops on the costed fields varied from 4 to 14 tons per acre, with an average of nearly 9 tons over all soils. The average for the different soil groups varied from just under 4½ on the very light soil group to just under 11 tons per acre on the fen soils. It must be borne in mind, however, that the year under review was by no means a normal one for, to quote *Agricultural Statistics*, "the excessive surface moisture . . . gave rise to excessively luxuriant tops." An average yield of 8·9 tons of tops cannot, therefore, be taken as representative of a normal season.

CHAPTER II.

1. FIELD DATA

THE 182 fields in respect of which information has been obtained are situated on exactly 100 different farms. In just 60 cases a single field was costed on each farm; 20 farms contributed two, and 10 farms three fields each; and, of the remaining 10 farms, 5 had four fields, 1 had five, 2 had six, 1 seven, and 1 eight fields under beet. In some cases where a single field was costed this was only one of several which were grown, but, on the other hand, in one or two examples two fields have been treated as one for cost purposes.

The average size of all the 182 fields is just over twelve and a half acres, and the range is from one and a half to sixty acres. In 35 cases the fields are less than five acres in extent, 48 fields are of five, but under ten, and 47 of ten, but under fifteen acres. Of the remainder, 19 are under twenty acres and 21 between twenty and thirty acres, while 12 are thirty or more acres in extent. These figures refer to the acreage under beet, inclusive of headlands. The relationship between the size of the field and the cost and return per acre is discussed on page 43.

It is indicative of the extent to which sugar beet under the 1924–27 subsidy price has broken up farm rotations that beet has followed roots or a fallow more often than any other crop—on no less than 29 per cent. of the 182 fields is this the case. This is mostly due to the practice in some districts of growing sugar beet after sugar beet on the same land; a practice which can be defended even more under the new contract than it could during the last year of the old price; for, if the first crop is dunged and subsoiled, then the profit may be expected from the second crop. Probably a third beet crop would, in this country at present, still be immune from the ill-effects experienced as a result of such a system on the Continent, although too long an extension of this practice would unquestionably be detrimental to the rest of the farm.

Barley is more common than wheat as a preceding crop, for it appears in 24 per cent. of the examples to the latter's 20 per cent. Oats account for a further 15 per cent., and all straw crops together total only 60 per cent. of the previous crops.

On almost half (48 per cent.) of the fields barley (1928 crop) has been grown after the beet—a fact which illustrates that opinion does not differ considerably as to the best crop to follow sugar beet. It is perhaps surprising to find that even under the 1928–30 contract prices in no less than 22 per cent. of the cases is the beet followed by another root crop. But, whereas the 1927 sugar beet crop was taken after sugar beet in 30 cases, it

has been followed by sugar beet in only 17 examples. Wheat represents a further 16½ per cent. of the succeeding crops, and all straw crops together amount to 76 per cent. of the total.

The quantity of seed sown varied from 8 to 20 lb. per acre, but the average amount used on the fields where beet was grown on the flat was 14·7 lb. per acre, while on the ridge the average quantity per acre was two pounds less. The importance of this question of rate of seeding is demonstrated and commented upon elsewhere (page 47), but here it is sufficient to point out that the over-all average rate for the 182 fields concerned was 14½ lb. per acre. These figures do not include field 60, which was drilled twice, and received altogether 27 lb. per acre.

It cannot be doubted that in the past insufficient attention has been given to the variety of seed used. Growers do not yet realise the influence which this factor may have both on yield and, more especially, on sugar content. Evidence of this lack of interest in seed varieties was obtained when an attempt was made to collect from growers the name of the seed they used. In no less than 70 per cent. of cases the enquiry had to be referred to the factories concerned. Yet this factor cannot be of less importance in reference to the sugar beet crop than it is, say, in the case of barley or wheat. Not only are sugar content and yield dependent to some extent on the variety of seed used, but the amount of "bolting" that occurs in some years is another factor which must be considered in this connection. During the past season, however, the weather was such that this latter problem did not become a serious source of loss. But the farmer cannot be blamed entirely for the ignorance that exists in this country on this very intricate subject. He can, at best, only distinguish between English and Continental grown seed, while in most cases the names are, to him, only an unpronounceable word (e.g. *Buszezynski*). The rapid development of sugar beet growing in this country must have resulted in a demand for some 1500 tons of seed in 1927 from Continental seed growers, and it seems improbable that this demand could have been supplied without the introduction of varying qualities of stock. Certainly the interests of the factory and the grower are the same in this question, and no effort should be spared in making this country less dependent on foreign sources and in guiding the grower in his choice of variety.

Information as to the variety of seed drilled was collected (and appears in Appendix B) in the hope that some deductions might be possible as to the relative merits of different varieties. Unfortunately, however, in many cases more than one variety was drilled in a single field, and, after eliminating other factors such as variations in soil type, the use or non-use of dung and the effect of subsoiling, it was found that the number of examples available for comparison was too small to give reliable results.

The date of drilling extended from 4th April to 21st June, but just 80 per cent. of the fields were drilled between 20th April and 20th May. The actual distribution of the dates of drilling is given in the following table:—

TABLE 6

FREQUENCY DISTRIBUTION OF DATES OF DRILLING

Period	Before April 11.	April 11 to 20.	April 21 to 30.	May 1 to 10.	May 11 to 20.	May 21 to 31.	After May 31.
No. of Fields Drilled	2	6	35	51	45	16	8

The significance of the above figures and their bearing on yield and rate of seeding is demonstrated and discussed elsewhere (page 48).

In 19 out of the 182 fields sugar beet was grown on the ridge. Of these, 10 are in the light to medium soil class, 4 in the medium to heavy, 3 in the fen, 1 on a sewage farm and 1 on very light land. The average washed yield for the whole 19 was 7·215 tons per acre, and the average sugar content 16·3 per cent., but, as these figures are partly dependent on the proportions in which the various soil classes are represented, they are not comparable with the over-all average of all farms. A discussion of this subject is deferred to page 49.

The average distance between the rows in the 182 fields was exactly 20 inches, but the range was from 16 to 27 inches. The latter, however, is an exceptional case as only fields 32 (26 inches) and 92 (27 inches) had drills more than two feet apart. The most common distance between the drills was 18 inches, there being 39 instances of that distance, while 23 were at 19 inches, 30 at 20 inches, and 33 at 21 inches. In 12 cases the rows were only 16 inches apart, and at the other extreme there were 17 examples of 24 inch drills. That this subject is of considerable interest and importance is apparent from the conclusions to be drawn from the figures given on page 49.

The figures which appear in Appendix B under the heading of "Distance between Plants," represent rather the ideal at which the grower aimed than the actual distance between the roots at harvest time. Indeed, the harvested roots were probably on the average some 3 to 6 inches further apart than the distances given by the farmer at the time of singling. The average of the distance of plant aimed at is 8·7 inches, but there is a variation of from 6 to 12 inches. On nearly half the fields concerned the beet were intended to be chopped out at 9 inches apart and a further quarter should have been 8 inches apart. In only three cases was the distance narrowed down to 6 inches and the other extreme (12 inches) occurs five times. It was hoped that it would be possible to draw some conclusions from these figures, but the distances aimed at by the growers differed so considerably from those actually achieved, while the factors of soil and management were so variable, that reliability in results was impossible.

2. MANURING*

In 80 out of 182 fields dung was applied direct to the sugar beet crop. In 7 cases, however, only part of the field was dressed, so that only 73 (or 40

* See Appendix C.

per cent.) of the fields received a full dressing. In the majority of cases the dressing was from ten to twelve loads an acre, but it varied from eight to over twenty. In 3 examples shoddy took the place of dung, and in 4 others sludge or sewage was applied. Guano was used on two fields in addition to dung, while in 13 cases both dung and fish manure were used, and on a further 9 fields fish manure was applied without dung. Two growers applied meat meal, and one used soot.

Sulphate of ammonia was used on 63 fields. In 28 cases it was the only artificial nitrogenous manure applied; in 30 cases it was used in conjunction with nitrate of soda and in 5 cases with nitrate of lime. Nitrate of soda was used by 62 growers altogether, three of whom used nitrate of lime as well, so that on 29 fields nitrate of soda was the only artificial manure supplying nitrogen. Nitrate of lime was put on to 16 fields, 8 of which received either sulphate of ammonia or nitrate of soda. Altogether only 103 out of 182, or a little over 56 per cent., of the fields received an artificial nitrogenous manure.

Sixty fields had a dressing of superphosphate, and a further 8 received North African or rock phosphate. In 6 other cases a bone manure supplied the only artificial phosphate, while 4 more growers used steam bone flour as a drying agent in their own mixtures. Basic slag was applied to 5 fields. Altogether, then, 79 fields received an artificial phosphatic manure.

Kainit, of one grade or another, was put on 66 fields, one of which also received sulphate of potash and another potash salts. Apart from these, 17 fields were dressed with muriate of potash and 14 others received some alternative form of potash salt. Altogether, 97 out of 182, or more than half the fields, received an artificial potash manure.

No less than 79 fields received a dressing of some "special" sugar beet or other patent manure. In 14 cases this patent manure was the only fertiliser used, and on a further 15 fields it was applied alone with dung. In 21 cases some nitrogenous artificial manure was added, and on the remaining 27 fields other phosphatic or potash manures were also used. Lime, if it may be included among the manures, was applied to only 8 fields, and one grower used salt. On 7 fields no direct manuring whatever was done, but one of these had been treated with sewage before the sugar beet was drilled.

With such a diversity of manuring, complicated by the inclusion of so many "patent" mixtures and by the arbitrary application, in many cases for the grower's private experimental purposes, of a bag or so of this or that manure, it soon became evident that it would be impossible to compare the effects of different systems of manuring. But one fact became apparent very early on in the investigation, namely, that, in the majority of cases, the larger growers pursued a definite system of manuring, while those with only a few acres under beet, although they manured more heavily, did so, in many cases, in a haphazard way, appearing to use any manure which came into their hands. The heavier cost of manuring on the smaller fields is well illustrated by the table on page 43.

The distribution of the various classes of manures on different soils follows the lines which would be expected. Whereas 57 per cent. of the fields in the light to medium soil class received a dressing of dung, only 21 per cent. of the fen fields were manured in this way. The medium to heavy soil class, with 41 per cent. of its fields dunged, falls between the two. The application of artificial nitrogenous manures was again much heavier on the light to medium soils, where 72 per cent. of the fields were thus treated. In the medium to heavy class 63 per cent. received some artificial nitrogen, while on the fens only 16 per cent. of the fields were manured in this way. As would be expected, phosphatic manuring was most common on the heavier soils, where 46 per cent. of the fields had some form of this manure. In the light to medium class 43 per cent., and in the fens 37 per cent., of the fields were manured with phosphates of some kind. Potash again follows the orthodox distribution, for in the fens, light to medium and medium to heavy groups, the percentage of fields manured with potash is 61 per cent., 56 per cent. and 39 per cent. respectively.

Appendix C, which gives in detail the manuring of each individual field, shows only the total amount of manure of each kind which was applied, and, to get an idea of the rate of application, it must be considered in conjunction with Appendix B, which gives the size of each field. The "average" dressing of sulphate of ammonia, where it was used, was 1½ cwt. per acre; the actual amounts vary from ½ cwt. to 3½ cwt. Nitrate of soda, where used, was applied at an average rate of 1¼ cwt., and nitrate of lime at the rate of 1 cwt. per acre. The average dressing of superphosphate was 3 cwt., but the actual amounts varied from 1 cwt. to 7 cwt. an acre. Kainit was applied at an average rate of 4½ cwt. (varying between 1½ and 11 cwt. per acre) and muriate of potash at 1½ cwt. per acre. Other potash salts were applied at the rate of 1¾ cwt. an acre. The average dressing of fish manures was 7 cwt., and of patent manures 4½ cwt. per acre. This latter item varied from ¼ cwt. of Genzyme to half-a-ton of one of the less expensive special sugar beet mixtures.

The prices of the artificial manures were those ruling in the early part of 1927. Sulphate of ammonia cost from £11 13*s.* 6*d.* to £13 13*s.* 0*d.* a ton, nitrate of lime from £11 5*s.* 0*d.* to £13 17*s.* 0*d.*, and nitrate of soda from £13 5*s.* 0*d.* to £16 a ton, delivered on the farm or at the nearest railway station. These variations were doubtless due to differences in quality, in distance delivered, and in the quantity purchased. The average price of superphosphate was £3 14*s.* 0*d.* Kainit, muriate of potash, and potash salts varied considerably with the quality, the average being £2 17*s.* 6*d.*, £10 6*s.* 0*d.*, and £4 7*s.* 0*d.* respectively. Fish manures varied according to specification from £1 15*s.* 0*d.* to £9, and patent manures from £6 5*s.* 0*d.* up to no less than £30 per ton, the most common price for the latter being about £8 10*s.* 0*d.*

3. YIELDS

The season 1927 was, it is to be hoped, an exceptionally poor one, so far

as the sugar beet crop is concerned. The following quotation from *Agricultural Statistics, 1927*, emphasises this point: "The average yield of washed and topped beet delivered to the factories, which was estimated by the factories at the beginning of November to be 8·1 tons to the acre, has, in fact, not exceeded 6·5 tons. This compares most unfavourably with 8·6 tons to the acre in 1926 and 7·8 tons in 1925. The low yield per acre in 1927 was easily the worst so far experienced by the beet sugar industry in this country, and was undoubtedly due to the bad weather conditions experienced during the whole of the growing season. The cold, dry spell in the spring made the preparation of a good seed-bed very difficult and generally retarded germination. Later, the continuous wet delayed and handicapped the singling of the plants, and also encouraged the growth of weeds, which were not easily eradicated owing to the saturated condition of the soil. Then again, the excessive surface moisture caused very fangy growth of the roots and gave rise to excessively luxuriant tops, whilst the cold, wet autumn and lack of sunlight hindered proper root development and ripening and led to low sugar content and purity."

On the costed fields washed yields varied from 2·4 tons to 12·1 tons, with an average of 7·7 tons. So large a difference in the average yield from the costed area and that for the country as a whole (nearly $1\frac{1}{4}$ tons in favour of the former) calls for some comment. Probably the main explanation lies in the uneven proportion occupied by fen lands in the two groups. Thus, in the costed group the fen acreage, together with that of the sewage farms, accounts for approximately one quarter of the whole costed area,* while, taking the country as a whole, the acreage of fen beet could amount (in 1927) to no more than one-sixth of the total area under beet. Fuller discussion of the yields must be deferred, however, to a later page.

4. TARE

The proportion of tare in each consignment of roots is calculated by the factory staff. The method of sampling is, perhaps, best explained by quoting from the contract conditions of one of the factories.† "The grower is not required to wash the beet, which will be weighed at the factory upon arrival. The tare of each consignment will be calculated by taking a sample (which shall not exceed one-twentieth of such consignment) and washing the same, and the loss in weight occasioned by washing and re-topping (if necessary) will represent the percentage of tare to be deducted from the weight of the consignment. The factory has the right to unload by water-power, in which case 2 lb. per cwt. will be added to the said tare; the same addition of 2 lb. per cwt. will be made for beets delivered by road and tipped direct into a flume."

The amount of tare is influenced very strongly by soil conditions during

* See Table 13. † Bury St. Edmunds.

the harvesting period, which in the past season were most unfavourable to the majority of growers. *Agricultural Statistics* states in this connection: "The wet, sticky conditions of the soil and the fangy nature of the roots made harvesting very difficult, and, in consequence, the roots were delivered to the factories in a dirtier condition than usual, the average tare being about 20 lb. per cwt. as compared with about 15 lb. per cwt. in 1926."

Tare in the yields from the costed fields varied from 7·3 lb. per cwt (6·49 per cent.) to 49·8 lb. per cwt. (44·49 per cent.), with an average of 19·4 lb. (17·31 per cent.). The influence of tare in the economics of beet production is discussed at some length in Chapter IV.

5. SUGAR CONTENT

The average sugar content of the costed beet was 16·1 per cent.; this figure compares with 16·13 per cent. for the country as a whole. The unfavourable season was no doubt responsible for the drop in sugar content when compared with that of 1926 (17·33 per cent.). The range in the field average sugar content of the costed beet was from 12·1 per cent. (field 139) to 17·9 per cent. (fields 17 and 65).* The field average sugar content has been obtained in every case by weighting the sugar content of the individual consignments from each field. The figure thus obtained has been termed the "effective sugar content."* In investigating the factory invoices from which the *data* relating to tare, yield and sugar content were obtained, it was impossible to ignore the astonishing variations recorded by the factory analyses. In no less than six cases did the sugar content of consignments *from the same field and delivered on the same day* vary by over 3 per cent. sugar, while in 53 similar cases the variation was between 2 per cent. and 3 per cent. sugar. Reference to any factory contract form gives a clue to this remarkable variation; to quote again from that of the Bury St. Edmunds' Factory: "From each consignment ten roots of different sizes, representing as nearly as possible the range of sizes in the said consignment and as topped and delivered by the grower will, after being washed, be analysed by the chemist of the factory in order to ascertain the sugar content by the 'cold water digestion method'." Now, the average size of the individual consignments of costed beet was approximately 5 tons. Assuming that each root weighed 1 lb., this will give 11,200 roots per consignment, of which *only* 10 *were chosen for an analysis purporting to give the average sugar content of the whole consignment.* Statisticians agree that an analysis of at least 400 roots would be necessary in order to get a result accurate to within 0·5 per cent. sugar, so it is hardly to be wondered at that, when only 10 beets are analysed, fluctuations such as those mentioned above occur.

There can be little dispute over the fact that growers, *taken as a whole,* are not out of pocket as a result of the system of analysis, but the fact remains

* Appendix D.

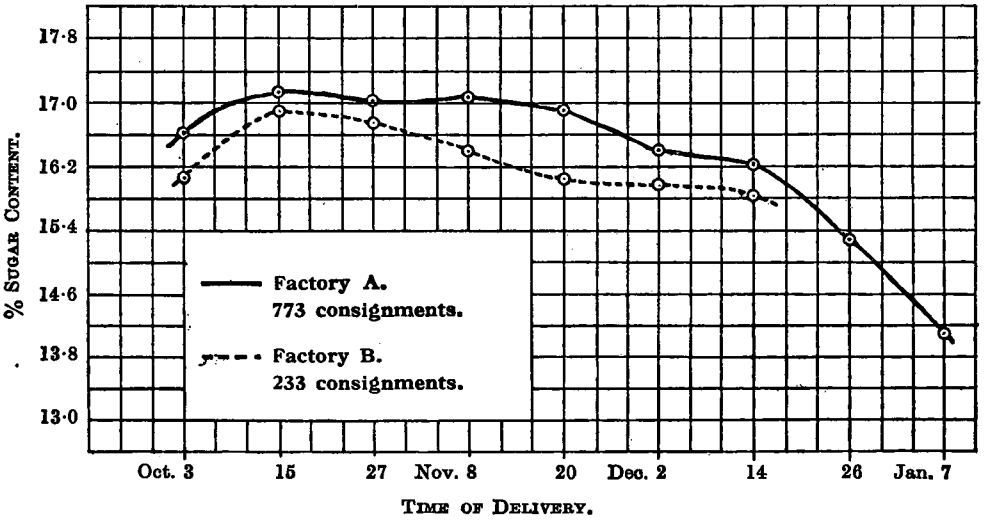
that one half of the growers may get less than their due, while the other half may definitely benefit from inaccurate analysis. It is, of course, quite out of the question to expect the factories to sample anything like 400 roots per consignment, but it is apparent that a sense of irritation has been engendered amongst growers by such examples of sugar content fluctuation as have been referred to. Such feeling between farmers and factory cannot be afforded in the difficult years before the industry, and it is suggested that every endeavour should be made, on the factories' part, to improve the technique of sampling, and, on the farmers' part, to appreciate the practical difficulties which the matter embraces.

Before leaving this subject it is perhaps not without interest to compare the analyses recorded by two different factories situated in adjoining areas. Diagram III illustrates graphically the sugar content as recorded by two factories, designated A and B, of beet from fields of a similar soil texture (i.e. light to medium*). The average sugar content is grouped over twelve-day periods. It seems improbable that difference in locality alone should be responsible for the marked inferiority of the beet delivered at factory B, which at the best averages 0·24 per cent., and at the worst 0·86 per cent., below the factory A analysis of sugar content. It is clear, however, that the number of consignments on which the diagram is based is too small to provide any conclusive proof of a definite disparity between the two sets of figures.

* See page 34.

DIAGRAM III.

Comparison of results of sugar analyses at two Factories situated in the same locality.



CHAPTER III.

1. INFLUENCE OF TIME OF DELIVERY ON SUGAR CONTENT

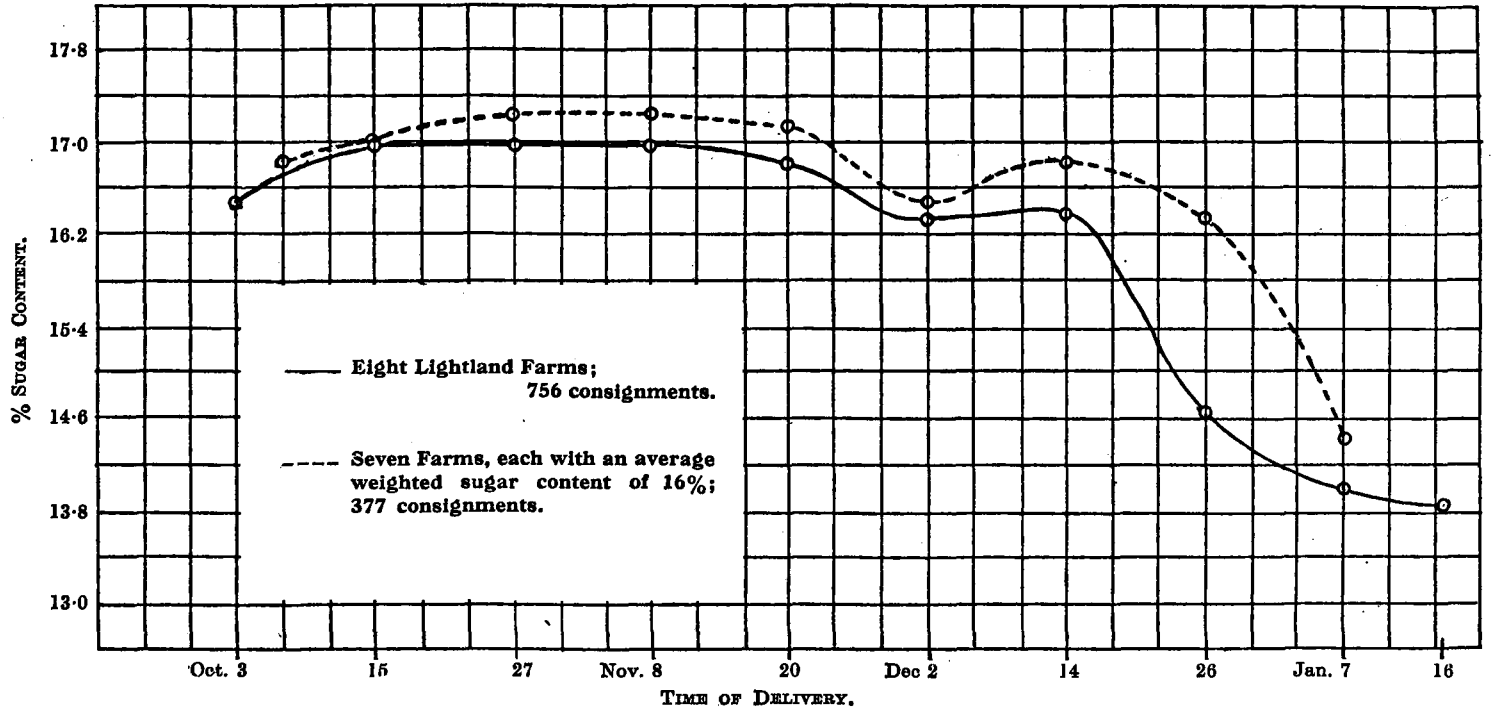
ANY absolute measure of the fluctuation in sugar content due to time of delivery alone presents a difficult problem on account of the complicating factor of weather. Thus, if day-to-day weather conditions were constant, or altered (in hours of sunlight, temperature, rainfall, etc.) at an even rate corresponding to "average" conditions (a purely theoretical and entirely impossible state of affairs), movements in sugar content could be attributed entirely to time of delivery (i.e. over-ripeness). But, for example, sudden severe frosts followed by rain and the other common forms of deviation from "average" conditions exert a tremendous influence which cannot be dissociated from the effect of time of delivery. One of the largest and most experienced growers in the Eastern Counties writes in this connection as follows:—"Climatic conditions after ripening have a big influence, i.e. heavy rain, particularly after frost, will reduce sugar content as much as 2 per cent. in a day or two. Beet generally begin to lose sugar after the last week in November at the rate of about 0·25 per cent. per week. This I don't think is entirely due to weather conditions, but to some chemical change in the beet, as year after year it seems so constant." It will be noticed that this grower attributes to severe frost followed by rain as much loss as might be occasioned by two months normal conditions commencing in the last week in November.

In Diagram IV is plotted the fluctuation in sugar content (averaged over twelve-day periods) for consignments during the 1927 season from (*a*) eight light land farms (No. 101, 102, 104, 107, 182, 184, 194, and 204), and (*b*) seven farms, each having an average weighted sugar content of 16·0 per cent. for their total deliveries (No. 104, 113A, 136, 145, 155, 175, and 189). There is no need to call attention to the great similarity between the two curves. A further proof, if any was needed, of the representative nature (*for this particular season*) of these two curves was obtained by plotting the results achieved on a large number of other farms of varying soil classes, localities, and weighted sugar content (this time using the variation in sugar content of each individual consignment about the weighted average content of the farm concerned) when exactly the same tendencies were apparent.

Being satisfied with the general shape of the curve, as shown in the diagram, an attempt was made to locate more closely the critical points. For this purpose farms were grouped according to the period covering the bulk of the deliveries from each. Thus, one group contained those farms delivering mainly during October and November, another those delivering during November and December, while a third group consisted of farms delivering

DIAGRAM IV.

Effect of Time of Delivery on Sugar Content.



mainly in December and January. Each of these groups was analysed by the method of variation of the sugar content of individual consignments about the weighted average of each farm. From this last analysis it appears that the sugar content increased by roughly 1·0 per cent. between the end of September and the 25–30th October; from then until the 12th–17th November it kept fairly constant with, if anything, a slightly downward tendency. Between the 17th November and the 6th–11th December it fell by approximately 1·0 per cent., when, after a slight rally, it fell sharply to the end of the season with a loss of nearly 3·0 per cent. in the last four weeks of the campaign. The importance of this last movement is very apparent. Presuming that it occurs below the 16·5 per cent. sugar content figure, it is equivalent to 9*s.* per ton (under the 1928–30 prices) and, with an 8 ton crop, £3 12*s.* 0*d.* per acre. Deliveries after the middle of December are thus almost bound to be unremunerative, for it seems unlikely that this drop, occurring when it does, can be compensated for by any increase in weight due to continued growth.

The weekly quota arrangement for deliveries, inaugurated by the factories during the past season,* is of great importance in this matter, for, by it, an equal opportunity is given to each grower to benefit from early deliveries. But the question still remains as to how much of the sugar content fluctuation is due to weather conditions and how much to time alone. Further reference is made to this matter under the next heading of "Weather Conditions."

2. WEATHER CONDITIONS

The following account of the weather conditions experienced at Cambridge during the growing and harvesting periods of the crop has been kindly contributed by C. S. Leaf, Esq., Meteorological Observer to the Department of Agriculture.

Owing to the difficulty of calculating results for the Eastern Counties as a whole, it has seemed best to give the figures for Cambridge as being those most readily accessible. Weekly normals for the Eastern Counties are available, but not monthly ones; on the other hand monthly normals for Cambridge can be readily obtained, but not weekly ones. Lack of time made it impossible to search the records at the Meteorological Office, to extract the *data* necessary for showing the relation of the Cambridge figures to those of the Eastern Counties. Only the Cambridge results are, therefore, given for what they are worth, as affording some indication of the weather conditions in this part of the country.

April, 1927. The month was characterised by almost normal temperature, but there was a slight excess of rain and a notable deficiency of sunshine. There were 47·8 hours of sunshine during the first half of the month, and 107·8 in the latter half. The distribution of the rain was, however, irregular, as

* See page 27.

1·37 inches fell during the first fifteen days and only 0·27 ins. during the remainder of the month. In consequence of this distribution, rain was hoped for at the beginning of May.

May. While sunshine and temperature were almost normal during this month there was a very serious shortage of rain, the deficiency amounting to 1·18 inches. No precipitation whatever was recorded from April 26th to May 14th inclusive, and of the remaining days rain fell on only eight. While there was no very marked hot spell the highest temperatures occurred during the first nine days. Sunshine was evenly distributed over the month.

June. A considerable excess of rainfall, especially during the latter half of the month, to some extent made up for the dryness of the preceding month, but there was still a deficiency. Sunshine was slightly, and temperature considerably, below normal. The character of the whole summer is well shown from the fact that the maximum temperature for the year, which occurred on the 16th of this month, was only 81°, and was the only occasion on which 80° was reached.

July. In this month rainfall and temperature were slightly below normal, but there was a very notable deficiency of sunshine, amounting to no less than 80·5 hours. This deficiency was most marked during the middle of the month, especially between the 11th and 24th. During this period the total was 25·8 hours, giving an average of 1·8 hours or 4·7 hours per day below average. On the 6th–7th 1·12 inches of rain fell, but otherwise amounts were small, causing the excess over normal to be less significant than it otherwise would have been.

August. The very exceptional rainfalls which occurred in many parts of the country were not observed at this station, the fall being only a little above normal. Nevertheless, over the period between the 5th and 25th there were only two rainless days, the 18th and 23rd. Temperature was slightly above normal, while the excess of sunshine amounted to 23·8 hours. There were two short hot spells, from the 2nd to the 7th, and again from the 29th to the 31st.

September. An excess of rainfall amounting to 2·01 inches was the principal feature of the month. No rain fell from August the 26th to September the 5th, but from that date to the end of the month there were but five rainless days. The heaviest fall was from the evening of the 14th to 9 a.m. on the 15th, a duration of 17 hours, during which 1·03 inches were measured. There was a deficiency of 29·8 hours of sunshine, spread fairly evenly over the month, and temperature was also slightly below normal.

October. As regards temperature and sunshine this month was slightly above normal, but rainfall was 0·76 inches below. A dry spell began on the 3rd and lasted till the 20th, with the exception of two days of rain, the 13th and 14th. Thereafter the month was rather wet. During the dry spell the days were warm and ground frost was recorded on only one night, the 4th,

the normal number being seven for the month. Sunshine records were also good during this period. During the remainder of the month the nights were relatively warm, there being only two ground frosts.

November. Over the whole month temperature, rainfall, and sunshine were almost exactly normal. There was, however, more rain during the second half, which coincided with a sunless period, no sunshine being recorded from the 19th to the end of the month, with the exception of the 22nd, 25th and 26th. Ground frosts occurred every night from the 7th to the 14th, the severest being on the night of the 11th–12th when the temperature fell to 21°; the total for the month was nine, or five below the average. A little snow fell on the 12th and 13th.

December. Temperature this month was below the average, as a result of two pronounced cold spells, from the 16th to the 21st, and from the 26th till the end of the month. On the morning of the 19th the ground temperature fell to 8°, and on the 31st to 6°. On this latter occasion the air temperature at four feet above ground fell to 9°. Between the cold spells heavy rain fell, 1·14 inches being measured between the 20th and 25th. This was followed by heavy snow which was, however, so drifted by a N.E. wind of gale force as to afford little protection to vegetation. The early part of the period was deficient in both rainfall and sunshine. The first fifteen days were entirely sunless except the 5th and 6th. No rain was measured till the 13th except a slight fall on the 4th. Over the whole month there was an excess of rain amounting to 0·66 in., and a deficiency of sunshine of 2·3 hours.

January, 1928. The month was very wet, with rather high day temperatures. The snow of the previous month melted extremely rapidly, assisted by a heavy fall of rain, 0·82 in. falling on the 2nd. Sunshine was much in excess. The nights were often cold, but the number of ground frosts, eleven, was seven below normal. In general, the latter half of the month showed a more constant rainfall than the first part.

TABLE 7

AIR TEMPERATURES RECORDED AT CAMBRIDGE DURING THE GROWING AND HARVESTING PERIOD

	Actual (degrees).			Normal (degrees).			
1927.	Max.	Min.	Mean.	Max.	Min.	Mean.	Deviation.*
April	54·7	39·3	47·0	56·6	36·8	46·7	+0·3
May	62·8	43·0	52·9	62·9	42·7	52·8	+0·1
June	64·7	46·5	55·6	68·5	48·5	58·5	−2·9
July	68·2	52·7	60·5	71·7	52·0	61·9	−1·4
August ..	70·2	52·9	61·5	70·8	51·4	61·1	+0·4
September ..	62·4	48·3	55·3	66·3	47·4	56·9	−1·6
October ..	58·9	43·5	51·2	57·2	41·5	49·4	+1·8
November ..	48·6	37·5	43·0	49·6	36·5	43·1	−0·1
December ..	39·0	31·3	35·1	44·6	33·2	38·9	−3·8
January (1928)	46·6	34·9	40·7	43·3	31·9	37·6	+3·1

* None of these deviations is unprecedented.

TABLE 8

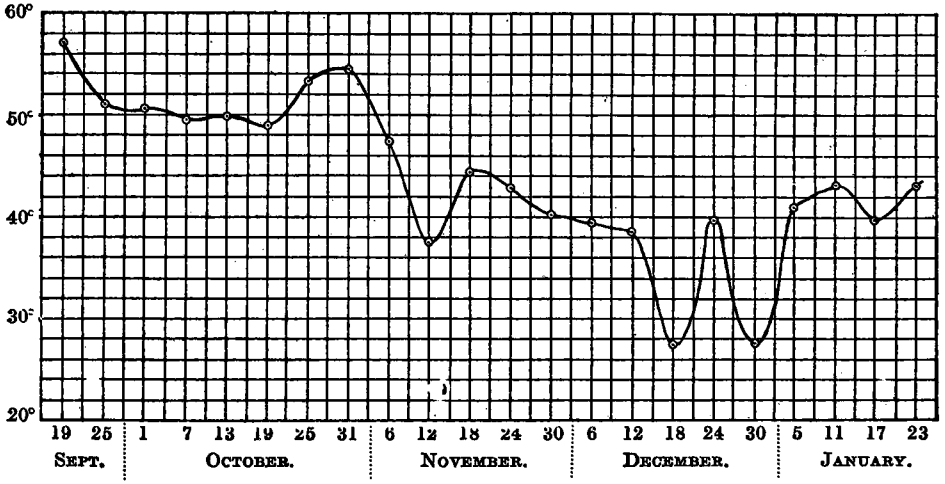
RAINFALL AND SUNSHINE RECORDED AT CAMBRIDGE DURING THE GROWING AND HARVESTING PERIOD

1927.	Rainfall (inches). Actual.	Normal.	Devn.	Sunshine (hours). Actual.	Normal.	Devn.
April	1·64	1·36	+0·28	155·6	183·9	−28·3
May	0·58	1·76	−1·18	204·1	202·1	+ 2·0
June	2·70	2·11	+0·59	182·5	201·0	−18·5
July	1·92	2·16	−0·24	121·6	202·1	−80·5
August	2·61	2·35	+0·26	211·7	187·9	+23·8
September	3·62	1·61	+2·01	121·1	150·9	−29·8
October	1·60	2·36	−0·76	104·2	103·9	+ 0·3
November	2·03	1·93	+0·10	63·1	62·1	+ 1·0
December	2·59	1·93	+0·66	37·6	40·0	− 2·4
January (1928)	3·16	1·50	+1·66	70·0	53·0	+17·0

Diagram V shows the mean daily temperature (plotted for six-day periods) as recorded on the University Farm during the harvest months. It cannot be denied that there is a close similarity between the curve and that (shown in Diagram IV) of variation in sugar content. The low temperatures in the middle of November correspond (there is approximately one week's lag) with the first marked drop in sugar content, while the extremes from the middle of December to the beginning of January coincide with the rapid fall in sugar content which characterises the last month of deliveries.

DIAGRAM V.

Mean Daily Temperature as recorded at Cambridge during the Harvesting period.



3. HAULAGE AND TRANSPORT

The importance to the sugar beet industry of the cost of haulage and transport is emphasised by the fact that nearly one quarter of the net cost per ton of washed beet delivered at the factory is incurred after the beet has been lifted and topped (11*s.* 0¾*d.* out of a total of 44*s.* 5½*d.*). In addition to the cost there is also the factor of convenience to be considered, for, if means of transport is not available at the time when it is required, considerable inconvenience and loss may result.

The cost of moving the beet falls naturally under two headings. The first, "Haulage," includes loading the roots into the farm waggons, carting them to roadside, rail station or wharf, as the case may be, and unloading. Under "Transport" appears the cost of carriage of the beet by road, rail or water from the loading station to the factory. The cost of haulage depends on the distance hauled and the nature of the going, but it is impossible to estimate in figures the value of this latter factor. The cost of transport depends almost as much on the method of transport as on the distance to factory. The average distance of haulage for the 100 growers was 1·18 miles. Beet transported by road (36 per cent. of total) was hauled on an average 0·22 miles or 1¾ furlongs. Just 55 per cent. of the beet was sent by rail, and the average distance from the station of these farms was 1·88 miles; the greatest distance being 6 miles. Beet transported by water was hauled on an average 0·47 miles.

The average road distance of the 100 farms from the factories they supplied was 20¾ miles, but the average distance of these farms from their nearest factory was 15½ miles. This discrepancy is accounted for by the fact that most of the growers had three-year contracts which were made before several of the factories now working were erected. Presumably there will be an average saving of 5 miles in transport under the new contracts—an economy which would effect a saving of approximately 1*s.* 3*d.* per ton of unwashed beet. The beet transported from the loading station to the factory by road travelled on an average 12·11 miles (none of these figures of distance includes the return journey), while the road distance to the factories of the growers who sent by rail averaged 27·4 miles. The longest road transport was 31 miles, while the corresponding figure for rail-carried beet was 60 miles. The average road distance from the factory of the growers who used water transport was 11·25 miles.

The following table gives the cost per unwashed ton of haulage and transport by road, rail and water, together with the average distances within each class. The figures refer to all the costed beet except that sent by growers who utilised more than one method of transport.

TABLE 9

COST PER UNWASHED TON OF HAULAGE AND TRANSPORT BY ROAD, RAIL AND WATER

	Method of Transport.			
	Road.	Rail.	Water.	Over-all.
Haulage (including loading and unloading)	2/11¾	5/2¾	4/6¼	4/3¾
Transport	6/3½	4/8¼	2/11¾	5/4¼
Total Cost of Carriage from Field to Factory (including loading, etc.) ..	9/3¼	9/11	7/6	9/5
Average Distance Hauled (exclusive of return journey) in Miles	0·22	1·88	0·47	1·18
Average Distance to Factory in Miles..	12·11	27·40	11·25	20·75

Readers must be reminded that the above table shows the cost per ton of *unwashed* beet and is not, therefore, comparable with the cost per ton figures appearing in Appendix F, which are worked out on a washed weight basis. If such a comparison is desired an adjustment must be made to allow for tare, which amounted to 18·60 per cent. on the beet which was transported by road, 16·92 per cent. on the rail-carried beet, and 15·68 per cent. on the water-borne beet. The rail and water carried beet have a lower tare percentage, probably because they were loaded two or three times (e.g. in the field, at the roadside or wharf and at station), whereas road-carried beet was loaded twice at the most. The water-borne beet has a slightly lower percentage of tare than the rail-carried beet, because it is entirely from fen or sewage soils, both of which groups show a tare percentage below average.* This matter is referred to again on page 39.

To assess the comparative advantages of the different means of transport it is necessary to re-calculate the costs given in Table 9 on a "Cost per Ton-Mile" basis.

TABLE 10

COST PER UNWASHED TON-MILE OF HAULAGE AND TRANSPORT BY ROAD, RAIL AND WATER

	Means of Transport.			
	Road.	Rail.	Water.	Over-all.
Haulage (including loading and unloading)	13/6½	2/9¼	9/7½	3/7¾
Transport	6½d.	2d.	3d.	3d.
Total per Ton-Mile from Field to Factory	9d.	4½d.	8d.	5½d.

The very great variation in the cost per ton-mile of haulage is to be expected. The greater part of this cost comprises loading and unloading the beet, and thus the cost per ton is not doubled if the distance hauled is doubled. In fact, the cost per ton-mile falls rapidly (although the actual cost per ton is rising) as the distance carted increases. Thus, the cost per ton-mile is 13*s.* 6½*d.* when the distance hauled is only 1¾ furlongs, but when the distance is increased

* See Table 13.

to 15 furlongs (that being the average distance to the station) the cost falls to 2*s.* 9¼*d.* per ton-mile.

If it is presumed that the average distance to the roadside is the same for road and rail transported beet it is possible to calculate, from the figures given in Table 9, the average cost of carting on the hard road from the field-side to the station (i.e. haulage less cost of loading and carting from field to hard road). Thus the cost of loading and haulage to roadside was 2*s.* 11¾*d.* per ton, while the cost of these operations, plus carting on hard road to the station, was 5*s.* 2¾*d.*, therefore the cost of carting the extra 13¼ furlongs was 2*s.* 3*d.* per ton, or 1*s.* 4¼*d.* per ton-mile.

It will be seen from Table 10 that the cost per ton-mile of road, rail and water transport is 6¼*d.*, 2*d.* and 3*d.* respectively, but it must be remembered that these figures apply only to the average road distances of 12·11, 27·40 and 11·25 miles in each case, and that a shorter or longer transport distance means a higher or lower cost per ton-mile. For instance, if the distance of water transport had been as great as that of rail transport, the cost of the former would probably have been lower per ton-mile than that of the latter. Nor must it be deduced that rail transport is, in every case, more economical than road transport, for often the increased cost of haulage to the station may outweigh the cheaper rail freight. It is impossible, however, to generalise on the economic limit of distance from factory at which beet may be grown, or to compare the advantages of road or rail transport, for both depend almost as much on the distance to the railway station as on the distance to the factory.

The then inadequate provision of facilities for handling large quantities of beet at the factories and a failure to foresee that the majority of growers would wish to deliver their beet at approximately the same time must be blamed for the unsatisfactory state of transport which existed during 1925 and 1926. The factories could not unload railway waggons as they were delivered, with the result that sidings and running lines alike were occupied by loaded trucks and the would-be consignors could not obtain empties. This state of affairs was disadvantageous alike to growers, factories and railway companies, for the grower could only lift his crop when he could obtain waggons, the factories received their beet irregularly, and the railways lost traffic. The total amount of beet worked by the factories served by the Southern Section of the London and North Eastern Railway increased by 147 per cent. between the 1925 and the 1926 seasons, but the increase in the amount of beet carried by that railway was only 107 per cent.

To avoid a recurrence of this during the 1927 season a scheme to regulate deliveries was adopted as a result of co-operation between the railway companies, the National Farmers' Union and the factories. Before the lifting season commenced growers were asked to estimate their yield and to suggest the period during which they proposed to deliver their crop. With this information the factories arranged a time-table of deliveries, adhering, as nearly as possible, to the dates proposed by the growers, and thus built up a weekly programme over the whole of the lifting season. Growers were then allotted

a weekly allowance of consignment notes, each of which authorised one delivery. Each week's supply of consignment notes was divided into two. The first kind, which represented about three-quarters of the week's deliveries, were numbered 1, 2, 3, etc., according to the week of the lifting season, and the remaining quarter were lettered A, B, C, etc., in the same way. These consignment notes applied alike to road, rail and water deliveries.

Free loading was allowed at the beginning of the season until the factories had accumulated 36 hours' supplies, and from then on deliveries were regulated according to the weekly allowance of consignment notes. When the factories had more than 24 hours' supplies available for unloading the use of the lettered consignment notes was suspended. If the supplies exceeded 48 hours' working the numbered permits were also suspended. Weekly permits suspended in this way became available at the end of the contract period of delivery, so that restricted delivery during one week was not reflected in increased supplies the next week. Special consignment notes were issued for exceptional cases.

The illustrations given in Diagram VI, which are reproduced by the kind permission of Mr. W. McAuley Gracie and the Editor of the *L. & N.E. Railway Magazine*, to whom, also, we are indebted for much of this information, illustrate the success of this scheme. The black indicates the number of trucks available at 8 a.m. daily, for unloading at the factories mentioned, and the shading shows the number of waggons actually unloaded each day. They refer respectively to the 1926–27 and the 1927–28 seasons. The regular series of peaks in the number of trucks unloaded is due to the cessation of road supplies during the week-end and the consequent increase in the number of trucks handled. The very fact that delivery was on a weekly, rather than a monthly, basis, contributed largely to the success of the scheme, while the factories (only two of which remained outside the scheme) were also better equipped for handling large quantities of beet. The reduction in the number of waggons waiting to be unloaded is apparent from the reduced amount of black in the second chart. That these illustrations are representative of the general state of affairs is supported by the fact that the railway company to which they refer carried over 70 per cent. of the beet delivered at the factories concerned, and also that, whereas the increase in the amount of beet worked in 1927–8 by these factories was 22 per cent. over that of the 1926–7 season, the railway handled 25 per cent. more than in the previous year. It seems probable that the adjustments in taxation (relief of rates, coupled with the petrol tax) will put a larger opportunity of contributing to the success of the sugar beet industry into the hands of the railways.

Enquiries on the subject of transport among the growers brought out no criticism against the above scheme, but there was one complaint which was not infrequently raised. Transport is paid by the factories on behalf of the growers on a minimum truck load of 6 tons, but growers declare that the trucks occasionally will not hold this quantity. Several of those who complained, themselves supervised the loading of the trucks to make sure that they were as full as possible and still the factory advice notes showed that they contained less than 6 tons.

DIAGRAM VI.

London & North Eastern Railway.

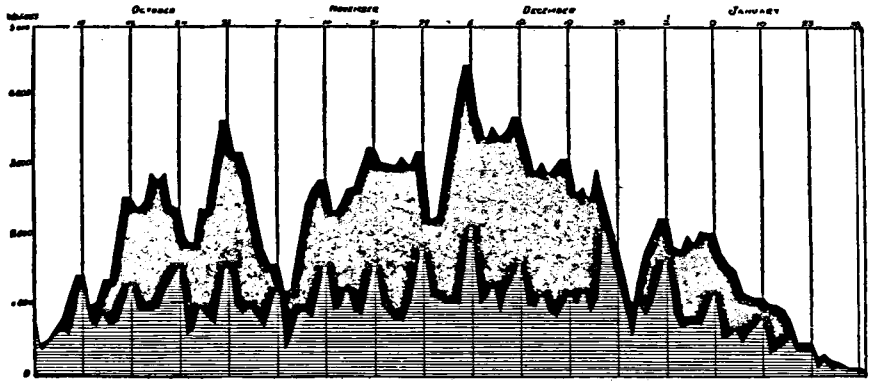
Comparison of Stocks of Beet in Railway trucks available for Factories at 8.0 a.m. daily, and Daily Clearances by Factories 1926/27 (no General Regulation Scheme) and 1927/28 Season (under General Regulation Scheme).

1926/27 SEASON.

Factories embraced:—

BURY,	COLWICK,	PETERBOROUGH,	IPSWICH,	WISSINGTON.
CANTLEY,	ELY,	FELSTEAD,	SPALDING,	

Total number of wagons during Season—91,906.

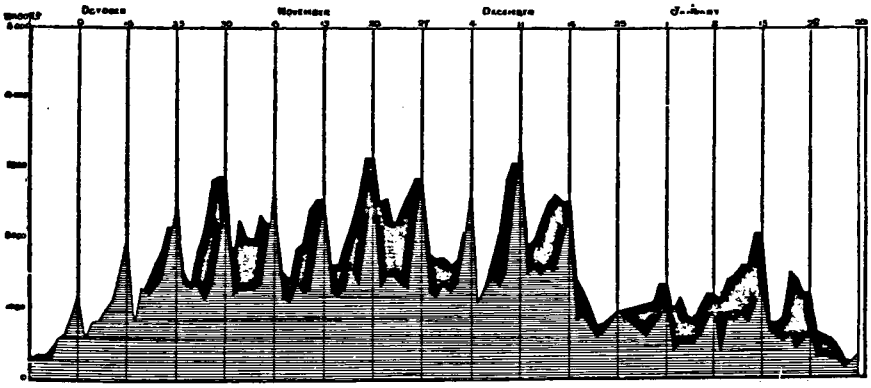


1927/28 SEASON.

Factories embraced:—

BARDNEY,	CANTLEY,	ELY,	FELSTEAD,	SPALDING,
BURY,	COLWICK,	PETERBOROUGH,	IPSWICH,	WISSINGTON.

Total number of wagons during Season—116,793.



Number of wagons available for Factories as ascertained at 8.0 a.m. daily indicated in full black. Number of wagons daily unloaded by Factories indicated by shading.

CHAPTER IV.

1. OVER-ALL COSTS PER ACRE AND PER TON.

As explained in Chapter I, the basic costings *data* (i.e. the farmers' weekly returns) have been analysed in such a way as to give the component costs of production in detail. These are shown in full in Appendix E for each field costed. In Table 11 is given, however, the average costs for all the 182 fields taken together under certain broader headings, where:—

"*Preliminary Cultivations*" includes all work done from the harvesting of the previous crop up to the time of, but not including, drilling the beet seed: i.e. ploughing, subsoiling, cultivating, ridging, harrowing, rolling and odd work.

"*Seed, drilling and after cultivations*" includes the cost of seed, drilling, chopping-out, singling, hand hoeing, horse hoeing, and odd work.

"*Manures*" includes the cost of all manures applied direct to the crop, *plus* the cost of carriage, carting, mixing and applying.

"*Harvesting*" includes lifting by machine, pulling, topping, lumping, and haulage by farm waggon to road side, railway station or wharf, as the case may be.

"*Overheads*" includes rent, rates and establishment charges. It should be noted that no allowance has been made for interest on capital or remuneration for the farmer's time as manager.

Before discussing these over-all results it may forestall criticism to point out that the five headings, which together constitute the *Farm Cash Cost*, do not add up exactly to the total shown, for the reason that complete *data* are not available for ten of the costed fields and the averages are based only on the fields for which heading costs are known. The actual difference between the sum of the five headings and the Farm Cash Cost is 9½d. per acre, and the explanation of this disparity will, perhaps, be more readily appreciated on reference to Table 13.

It will be observed that the actual direct cash costs incurred by the farmer amount to £18 16*s.* 2¼*d.* per acre, or 48*s.* 9½*d.* per washed ton, of which harvesting is the largest item, and preliminary cultivations the smallest. Transport to factory accounts for £2 5*s.* 2*d.* per acre (10·7 per cent. of total cash cost), or 5*s.* 10¼*d.* per ton, thus giving a total cash cost of £21 1*s.* 4¼*d.* per acre, equivalent to 54*s.* 7¾*d.* per ton. The cash cost does not, however, tell all the story, for something must be charged to represent the value of manures applied to, and cleaning cultivations done for, the crops immediately preceding the beet, e.g. dunging, folding, fallowing, green manuring, tops ploughed in where beet

has followed beet, etc. The principles involved and the methods employed in making both this calculation and that for the amount of residual values to be carried forward is discussed at length in Chapter I, so that here it is sufficient to note only the money values involved. Residual values brought forward from preceding crops amount to 17*s.* 2½*d.* per acre, giving a gross cost of £21 18*s.* 6¾*d.*, or 56*s.* 10½*d.* per ton. From this gross cost must be deducted an allowance for the value of the tops* and for the residual value of manures applied and cultivations done direct to the beet crop. These together total £4 15*s.* 10*d.* per acre, giving a net cost of £17 2*s.* 8¾*d.* per acre or 44*s.* 5½*d.* per ton.

TABLE 11

AVERAGE COSTS PER ACRE AND PER WASHED TON

No. of Costs	182
Acres	2303
Washed Yield per Acre	7·711 tons

Costs.	Per acre. £ s. d.	Per washed ton. £ s. d.	As a % of total cash cost.
Preliminary Cultivations	2 13 5	6 11	12·6
Seed, Drilling and After Cultivations	3 15 6	9 9¼	17·9
Manures	4 13 8	12 1¾	22·2
Harvesting	4 19 9¾	12 11¼	23·7
Overheads	2 14 7	7 1	12·9
Farm Cash Cost	18 16 2¼	2 8 9½	89·3
Transport and Growers' Representative	2 5 2	5 10¼	10·7
Total Cash Cost	21 1 4¼	2 14 7¾	100·0
Residual Values of Manures and Cultivations brought forward	17 2½	2 2¾	
Gross Cost	21 18 6¾	2 16 10½	
Credit for Tops and Residual Values of Manures and Cultivations carried forward	4 15 10	12 5	
Net Cost	17 2 8¾	2 4 5½	

Standard Deviation of Net Cost per acre	£3 12 4
Standard Error of Mean Net Cost per acre	5 6

It must be remembered that the above figures represent only the average of a large number of fields distributed over a wide variety of soils and influenced by a large number of diverse factors. The actual distribution of the items composing the average net cost is shown in Diagram VII, where it will be observed that they vary from £10 to £31 per acre. The average deviation of the items about the mean net cost is £3 12*s.* 4d.

* See page 8 *et seq.*

Finally, it need hardly be pointed out that the washed yield per acre influences the cost per ton to a greater degree than any other factor.* In this connection it must be remembered that, on account of the bad season, the 1927 crop showed an average reduction throughout England and Wales of over 2 tons of washed roots per acre compared with the 1926 crop.† Had the weather conditions been more normal it is likely that the costs per ton would have been considerably less.

2. OVER-ALL RETURNS PER ACRE AND PER TON

As emphasised already in the *Introduction* to this publication, the receipts and returns recorded are governed by the prices ruling in the last year of the full subsidy, viz. 54*s.* per washed ton of 15½ per cent. sugar content, *plus* or *minus* 2*s.* 6*d.* for each per cent. of sugar above or below this base, and *pro rata* for each decimal of a per cent.

The following table gives the average results of all the costed fields taken together.

TABLE 12

AVERAGE RECEIPTS AND PROFITS PER ACRE AND PER TON

Number of Fields	..	..	..	..	..	..	..	172					
Average Washed Yield	..	..	..	..	..	..	..	7·711 tons					
Average Sugar Content	..	..	..	..	..	..	..	16·1 per cent.					
						Per acre.			Per washed ton.		
						£	s.	d.	£	s.	d.
Total Cash Cost	..	..	..	..	..	21	1	4¼	2	14	7¾
Gross Cash Receipts	..	..	..	..	..	21	6	9¾	2	15	4¼
Cash Profit	..	..	..	..	..		5	5½			8½
Credit for Tops and Net Residual Values of Manures and Cultivations	..	..	..	..	..	3	18	7½		10	2¼
Net Profit	..	..	..	..	..	4	4	1		10	10¾

It may be pointed out that the *Gross Cash Receipts* represent the actual money value of the crop as determined from the factory invoices, irrespective of any deductions which the factories may legitimately make for seed or manures supplied on credit to the grower, money advanced on the growing crop, or cost of transport paid on behalf of the grower. Seed or manures obtained by the farmer in this way and transport paid by the factory are entered under the appropriate headings in the cost *data* shown in the preceding paragraph and elsewhere throughout this *Report*. It will be noticed that the actual cash profit per acre and per ton is 5*s.* 5½*d.* and 8½*d.* respectively, and when allowance is made for the value of tops and cultivation and manurial residues a net profit of £4 4*s.* 1*d.* and 10*s.* 10¾*d.* is realised. In discussing the returns from beet growing it is inadvisable to isolate either the cash or net results, but both sets of figures should be considered together.

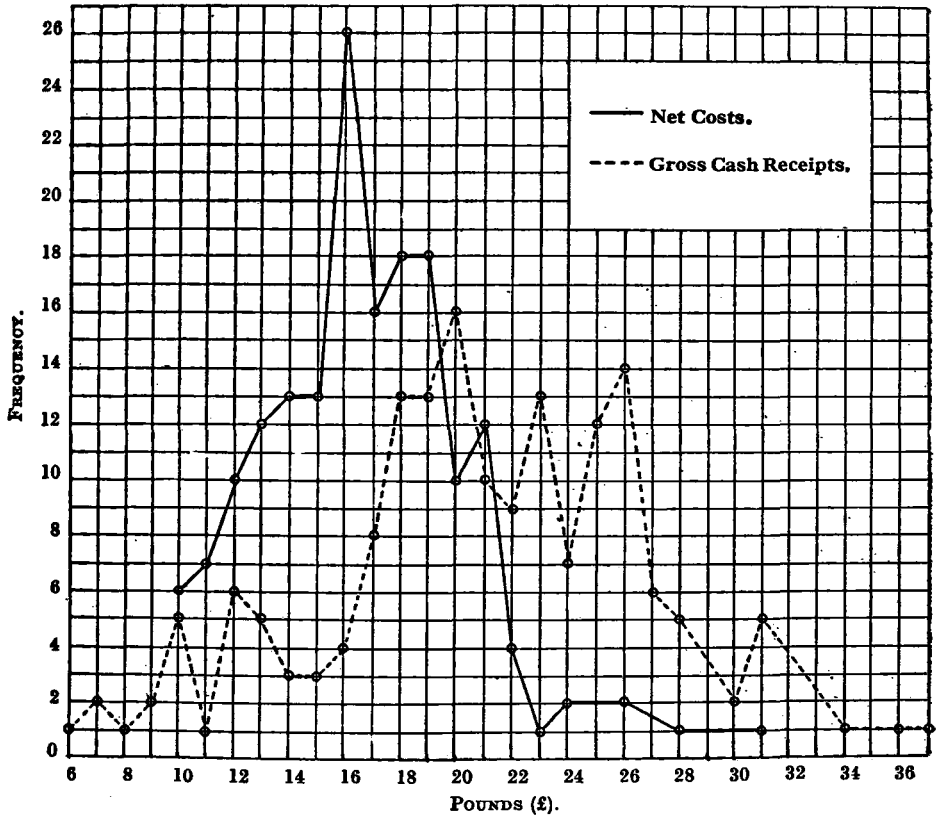
* See Diagram VIII, page 41.

† *Agricultural Statistics*, 1927, states: "The low yield [of sugar beet] in 1927 was easily the worst so far experienced by the beet sugar industry in this country."

The frequency distribution of the Gross Cash Receipts is shown in Diagram VII. They vary from £6 to £37 per acre, with an average deviation about the mean of £5 11*s.* 5*d.* It is of interest to note that, presuming costs and sugar content to remain constant, it will require an increase in yield of at least one and a half washed tons per acre to secure similar pecuniary results to the grower under the new 1928–30 contract prices.

DIAGRAM VII.

Frequency Distribution of Net Costs and Gross Cash Receipts.



3. RESULTS GROUPED ACCORDING TO SOIL TYPE.

This enquiry covers the largest Advisory Province in England, and embraces a wide variety of soils. A classification of the fields in soil groups, other than the very widest, would present an almost impossible task even to the geologist, and much more so to the agricultural economist, on account of the fact that field boundaries are generally fixed without reference to geological formations; for it is as much the rule as the exception to find two or more distinct soil types in one field. As a result of this complication, the very broadest soil classification has been employed in the present investigation, the groupings adopted being five, viz.:— Light to medium soils; medium to heavy soils; fen, warp or silt soils; very light (i.e. breck land) soils; and lastly, sewage farms which, although not a soil group, must be kept apart from the other classes. As might be expected, there was no call for a "very heavy" soil group, for those farms which in Appendix A are described as being of a "very heavy" nature grew beet on their lightest land, and, in the soil grouping, their fields fall into the "medium to heavy" class.*

The results of an analysis in soil groups is shown in Tables 13† and 14,‡ and are worth a careful study. On account of their importance, no excuse is made here for discussing them at some length in the following pages.

* See Appendix B.
† Per acre results.
‡ Per ton results.

TABLE 13

AVERAGE YIELDS, COSTS AND RETURNS PER ACRE ARRANGED IN SOIL GROUPS

(The yield, cost and return figures shown below are simple averages of the per acre results obtained in each field. As the cost *data* from some of the fields are incomplete, the number of items concerned with each individual cost average is shown.)

Soil group*	Light to medium.		Medium to heavy.		Fen, warp and silt.		Very light.		Sewage farms.		Over-all.	
Number of costs*	86		41		38		12		5		182	
Total acreage*	1076		424		516		221		66		2303	
Average size of field	12·5 acres		10·3 acres		13·6 acres		18·4 acres		13·2 acres		12·65 acres	
Unwashed yield per acre†	9·430 tons		9·261 tons		10·411 tons		5·171 tons		10·855 tons		9·351 tons	
Washed yield per acre†	7·862 tons		7·282 tons		8·670 tons		4·439 tons		8·959 tons		7·711 tons	
Tare†	16·33%		21·50%		16·41%		14·62%		17·15%		17·31%	
Effective sugar content†	16·5%		16·5%		14·8%		16·5%		14·1%		16·1%	
Sugar per acre†	2914 lb.		2719 lb.		2895 lb.		1654 lb.		2832 lb.		2780 lb.	
Lb. sugar per £ labour†	275		224		270		191		282		260	
Tops per acre†	9·0 tons		8·3 tons		10·9 tons		4·4 tons		9·0 tons		8·9 tons	
Costs and returns‡	Per acre.	No.	Per acre.	No.	Per acre.	No.	Per acre.	No.	Per acre.	No.	Per acre.	No.
	£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.	
Preliminary cultivations	2 14 2½	86	3 1 1½	41	2 6 11	38	2 0 1½	12	2 12 0½	5	2 13 5	182
Seed, drilling and after-cultivations	3 13 9½	84	3 19 0½	39	3 16 4½	38	3 14 7½	12	3 11 10	5	3 15 6	178
Total manures	5 9 11½	86	5 3 4½	41	2 19 11½	38	3 10 5½	12	2 5 8½	5	4 13 8	182
Total harvesting	4 17 6	83	5 15 7½	35	5 1 3½	37	3 9 4½	12	4 9 5½	5	4 19 9½	172
Total overheads	2 10 4½	86	2 9 10½	41	3 15 2½	38	1 17 0½	13	2 11 4½	5	2 14 7	182
Farm cash cost	£19 4 5½	83	£20 10 9½	35	£18 1 2½	37	£14 11 7½	12	£15 10 5½	5	£18 16 2½	172
Transport and growers' representative	2 5 11	83	2 12 0½	35	2 0 9½	37	1 13 5	12	2 5 2½	5	2 5 2	172
Total cash cost	£21 10 4½	83	£23 2 10	35	£20 2 0½	37	£16 5 0½	12	£17 15 8	5	£21 1 4½	172
Gross cash receipts	22 3 3½	83	20 14 0½	35	22 15 0	37	12 12 3½	12	22 12 7	5	21 6 9½	172
Cash Profit	12 11	83	—	—	2 12 11½	37	—	—	4 16 11	5	5 5½	172
Cash Loss	—	—	2 8 9½	35	—	—	3 12 9½	12	—	—	—	—
Residual values bt. fwd	16 0½	83	13 6½	35	1 0 4	37	1 6 3	12	18 0	5	17 2½	172
Gross cost	£22 6 5	83	£23 16 4½	35	£21 2 4½	37	£17 11 3½	12	£18 13 8	5	£21 18 6½	172
Total credits	5 4 4	83	4 19 5	35	4 8 6	37	2 15 3½	12	4 1 2	5	4 15 10	172
Net cost	£17 2 1	83	£18 16 11½	35	£16 13 10½	37	£14 16 0½	12	£14 12 6	5	£17 2 8½	172
Net Profit	£5 1 2½	83	£1 17 1½	35	£6 1 1½	37	—	—	£8 0 1	5	£4 4 1	172
Net Loss	—	—	—	—	—	—	£2 3 9	12	—	—	—	—
Distribution of *cash* Profits (+) and *cash* losses (−)	+48 −35		+12 −23		+28 − 9		+ 2 −10		+4 −1		+ 94 − 78	
Distribution of *net* profits (+) and *net* losses (−)	+72 −11		+23 −12		+36 − 1		+ 3 − 9		+4 −1		+139 − 33	
NET COST.												
Standard deviation	£3 10 10		£3 7 1		£3 6 7		£3 13 6		£2 12 2		£3 12 4	
Standard error of mean	7 9		11 4		10 11		£1 1 2		£1 3 3		5 6	

* See Appendix B. † Simple averages of *per acre* results given in Appendix D.
‡ Simple averages of *per acre* results given in Appendix E.

TABLE 14

AVERAGE COSTS AND RETURNS PER WASHED TON ARRANGED IN SOIL GROUPS

	Light to Medium.		Medium to Heavy.		Fen, Warp and Silt.		Very Light.		Sewage.		Over-all.	
	Cost per ton.	No.	Cost per ton.	No.	Cost per ton.	No.	Cost per ton.	No.	Cost per ton.	No.	Cost per ton.	No.
Preliminary cults.	6/10¾	86	8/3¾	41	5/5	38	9/0½	12	5/9¾	5	6/11	182
Seed, drilling, etc.	9/4½	84	10/10¼	39	8/9¾	38	16/9¾	12	8/0½	5	9/9½	178
Manures	13/11¾	86	14/2½	41	6/11	38	15/10½	12	5/1¼	5	12/1¾	182
Harvesting ..	12/4¾	83	15/10½	35	11/8¼	37	15/7½	12	9/11¾	5	12/11½	172
Overheads ..	6/5	86	6/10	41	8/8	38	8/4	12	5/8¾	5	7/1	182
Farm cash cost ..	48/10¾	83	56/5	35	41/8	37	65/8½	12	34/7¾	5	48/9½	172
Transport and G.R.	6/10	83	7/1¾	35	4/8½	37	7/6¾	12	5/0½	5	6/10¼	172
Total cash cost ..	54/8¾	83	63/6¾	35	46/4½	37	73/2½	12	39/8¼	5	54/7¾	172
Gross cash receipts	56/4½	83	56/10¼	35	52/5¾	37	56/10	12	50/6	5	55/4¼	172
Cash Profit ..	1/7¾	83	—	—	6/1¼	37	—	—	10/9¾	5	0/8½	172
Cash Loss	—	—	6/8½	35	—	—	16/4¼	12	—	—	—	—
Resid. vals. bt. fwd.	2/0½	83	1/10¼	35	2/4	37	5/11	12	2/-	5	2/2¾	172
Gross cost ..	56/9¼	83	65/5	35	48/8½	37	79/1½	12	41/8¼	5	56/10¼	172
Total credits ..	13/3¼	83	13/7¾	35	10/2½	37	12/5½	12	9/0½	5	12/5	172
Net cost	43/6	83	51/9½	35	38/6	37	66/8	12	32/7¾	5	44/5¼	172
Net Profit ..	12/10½	83	5/1	35	13/11¾	37	—	—	17/10½	5	10/10¾	172
Net Loss ..	—	—	—	—	—	—	9/10	12	—	—	—	—

(a) *Size of Field.*

That a connection exists between size of field and labour cost per unit of produce is undoubtedly correct, and one would certainly expect to find that the larger the area the more economical would be the application of labour. The following analysis of the light to medium soil group in field sizes appears to support this theory:

TABLE 15

INFLUENCE OF SIZE OF FIELD ON LABOUR COSTS

Size of field.	(1) Number of costs.	(2) lb. sugar* per acre.	(3) Labour cost per acre.	(4) lb. sugar* per £ labour.
Ten Acres and Under ..	50	3019	£11 3 8	270
Over 10 Acres	33	2755	£9 15 5	282

The above indicates that for every £ expended on labour (exclusive of transport) 12 lb. more sugar (worth to the farmer approximately 2*s.*) was produced on the larger sized field group than on the smaller. That the difference is not due to a larger yield of sugar per acre is demonstrated by column (2), which, together with column (3), suggests a still further factor in connection with size of field which is discussed elsewhere.† But as the item "labour" bulks to the extent of approximately 60 per cent. of the cost of

* Throughout this publication yields expressed in terms of pounds of sugar refer, unless otherwise stated, not to white sugar, but to sucrose. This figure is obtained by multiplying the washed yield by the sugar content.

† See page 43.

producing sugar beet (exclusive of transport), it is not unreasonable to look in this direction for possible economies. In Table 13 it will be noticed that the medium to heavy soil group represents the smallest average size of field (10·3 acres), and this fact, no doubt in itself due to the nature of the soil texture, may therefore add to the disadvantages under which the heavy-land grower works. At the other end of the scale is the very light soil group with an average size of field of 18·4 acres.

(b) *Yield, Tare and Sugar Content.*

Apart from the sewage farm group which averages the highest washed yield per acre, with almost exactly 9 tons, the group-yields in descending order are:—Fen, warp and silt 8·670 tons, light to medium 7·862 tons, medium to heavy 7·282 tons, and very light 4·439 tons. It is not out of place again to remind readers of the exceptional nature of the 1927 season. It will be noticed that the breck soils show a yield of little more than half that of the light to medium class, and nearly 3 tons lower than that from the medium to heavy class. Contrary to expectation, the very light soil group shows a sugar content (16·5 per cent.) no higher than that obtained by the light to medium and medium to heavy classes, and is distinguished only by having the lowest percentage tare (14·62 per cent.) of the five groups. Next to the sewage farms, the fen group records the lowest sugar content at 14·8 per cent. As would be expected, the medium to heavy land fields head the percentage tare with 21·50 per cent.

(c) *Sugar per Acre and per £ Labour.*

It can be readily appreciated that neither washed yield nor sugar content, taken individually, give an accurate measure of production. By combining these two factors into the single term of pounds sugar (sucrose) per acre much of the uncertainty is removed, but at the same time a fresh complication is introduced. Under the 1927 contract prices the first 15½ per cent. sugar was valued at the rate of approximately 3*s.* 6*d.* for every 22·4 lb. sugar (i.e. 1 ton beet at 15½ per cent. sugar was worth 54*s.*), while above that base the price was 2*s.* 6*d.* Thus it can be seen that to convert pounds sugar per acre to the correct money value of the crop is impossible on account of the variation in price per unit of sugar.* Nevertheless a measure of yield in terms of pounds of sugar per acre is a convenient one, particularly for certain comparisons.

It is an interesting fact (perhaps only a coincidence) that the average net profits recorded on the five soil groups fall into practically the same order as that shown for pounds sugar produced per £ labour. This is illustrated overleaf.

* Under the new 1928–30 contract prices the disparity in price per unit of sugar is greatly reduced, the first 16½% sugar being valued at approximately 3*s.* for every 22·4 lb., and above this base at 3*s.* 4*d.* per unit.

TABLE 16

RELATIONSHIP OF LABOUR COSTS TO PROFIT

	No. of costs.	lb. sugar per £ labour.	Net profit per acre.
Sewage Farms	5	282	£8
Light to Medium Soils	83	275	£5
Fen, Warp and Silt Soils	37	270	£6
Medium to Heavy Soils	35	224	£2
Very Light Soils	12	191	(loss) £2

An analysis of the field results of the light to medium soil group (Table 17) appears to support the suggestion, implied above, that such a measure of production is of value.

TABLE 17

RELATIONSHIP OF LABOUR COSTS TO PROFIT

lb. Sugar Per £ labour.	No. of costs.	Net profit per acre. £ s. d.
Above 400	5	12 1 10
350 to 400	8	10 2 2
300 to 350	12	8 0 5
250 to 300	25	6 12 7
200 to 250	20	2 0 9
150 to 200	10	(loss) 1 9 9
Under 150	3	(loss) 5 15 2

(d) *Costs.*

The most constant item of cost per acre in the five groups is that representing seed, drilling and after-cultivations, there being a variation of only 7*s.* 3*d.* between the highest (medium to heavy soil) group and the lowest (sewage farm) group. On the other hand, the greatest variation occurs under the heading of manures, where there is a difference of no less than £3 4*s.* 3*d.* per acre between the light to medium group (at £5 9*s.* 11*d.* per acre) and the sewage group (at £2 5*s.* 8*d.* per acre). The fen soils come next to the sewage group with an expenditure of almost exactly £3 per acre on manures. As might be expected, the cost of preliminary cultivations and harvesting is greatest on the medium to heavy, and smallest on the very light soil groups, the difference being £3 7*s.* 3*d.* in favour of the latter. This apparent advantage to the very light group is, however, on reference to Table 14, seen to be purely illusory, for, under three of the five "Farm Cash Cost" headings, the very light soils show the highest figures for cost per ton, while in the remaining two (viz. harvesting and overheads) they are baulked of pride of place by a few pence only. This somewhat extreme example emphasises the importance of judging crop costs *per unit weight* of produce rather than *per acre.*

The Farm Cash Costs per acre and per ton, representing the actual direct cash outlay incurred by the grower in the production of the crop, are illuminating.

TABLE 18

FARM CASH COSTS IN DIFFERENT SOIL GROUPS

Soil class.	Per acre. £ s. d.	Per ton. £ s. d.
Sewage	15 10 5¼	1 14 7¾
Fen, Warp and Silt	18 1 2¾	2 1 8
Light to Medium	19 4 5½	2 8 10¾
Medium to Heavy	20 10 9½	2 16 5
Very Light	14 11 7¾	3 5 8¼

To get the total direct cash cost of the crop the cost of transport together with the customary deduction at the factory of 1*d.* per washed ton to defray the expenses of the growers' representative must be added. The former item is obviously governed to a great extent by the distance transported and the method of transport, and in this connection the fen group, with its water-ways and close circle of factories*, is seen to be at a great advantage.

A further factor connected with cost of transport is the proportion of tare (mainly earth adhering to the roots) sent with the beet, for transport is, of course, paid on the gross weight and not on the washed, or net, weight of beet. Here the medium to heavy group is at a decided disadvantage, as the following figures so clearly show:—

TABLE 19

TRANSPORT COSTS IN DIFFERENT SOIL GROUPS

	(1) Transport per acre. £ s. d.	(2) Transport per gross ton. s. d.	(3) Transport per washed ton. s. d.	(4) Tare per acre (tons).	(5) Transport of tare per acre. s. d.
Medium to Heavy	2 12 5	5 7¾	7 0¾	1·99	11 2¾
Sewage	2 4 6	4 1¼	4 11½	1·86	7 7½
Light to Medium	2 5 3	4 9½	5 9	1·54	7 4½
Fen	2 0 1	3 10	4 7½	1·70	6 6¼
Very Light	1 13 1	6 4½	7 5¼	0·76	4 9¾

In the above table, column (2) indicates, to a certain extent, how much of the difference in cost of transport per washed ton is due to distance and method, while columns (4) and (5) give an indication of the incidence of the third important factor, namely tare. In the medium to heavy group, for example, practically two tons of earth per acre of beet were sent to the factory, at a cost to the grower of 11*s.* 2¾*d.* At the other end of the scale comes the very light group which sent three-quarters of a ton of earth per acre, at a cost of 4*s.* 9¾*d.* The magnitude of this loss is emphasised when it is considered that growers throughout England and Wales paid carriage at the rate of about 5*s.* per ton on a total of approximately 300,000 tons of earth in the 1927 season, i.e. incurred a total loss through this factor of some £75,000, in addition to the extra farm costs involved in haulage. This loss will become an ever

* See Diagram I.

greater dead weight as the contract price drops, and would seem to merit serious attention. Is it too soon or too fantastic to suggest that large growers at least would find it an economic proposition, where conditions are suitable, partially to wash their crop previous to despatch? Such a course would probably involve capital outlay on a small pressure pump and the services of a boy to direct a hose for five or ten minutes on to each cart load. Even though only half the tare can be removed by some such method, it would mean a saving of nearly £10 per annum to the grower of 50 acres.

Although the matter of residual values has been discussed fully in another section, it may dispel certain doubts if an explanation is given here of the apparent anomaly of the very light soil group being charged with the highest amount (£1 6*s.* 3*d.*) for residual values brought forward from the preceding crops. Reference to Appendix B will show that of the 12 very light soil fields no less than 7 grew beet in 1926, while one was bare fallowed.

A comparison of the total cash costs and net costs on the five groups is shown below.

TABLE 20

COMPARISON OF TOTAL CASH COSTS AND NET COSTS PER ACRE AND PER TON IN DIFFERENT SOIL GROUPS

	No. of costs.	Total cash costs. Per acre. £ s. d.	Total cash costs. Per washed ton.	Net costs. Per acre. £ s. d.	Net costs. Per washed ton.
Very Light	12	16 5 0¾	73/2½	14 16 0¼	66/8
Medium to Heavy ..	35	23 2 10	63/6¾	18 16 11¼	51/9¼
Light to Medium ..	83	21 10 4½	54/8¾	17 2 1	43/6
Fen, Warp and Silt ..	37	20 2 0¼	46/4½	16 13 10¼	38/6
Sewage	5	17 15 8	39/8¼	14 12 6	32/7¾
All together	172	21 1 4¼	54/7¾	17 2 8¾	44/5½

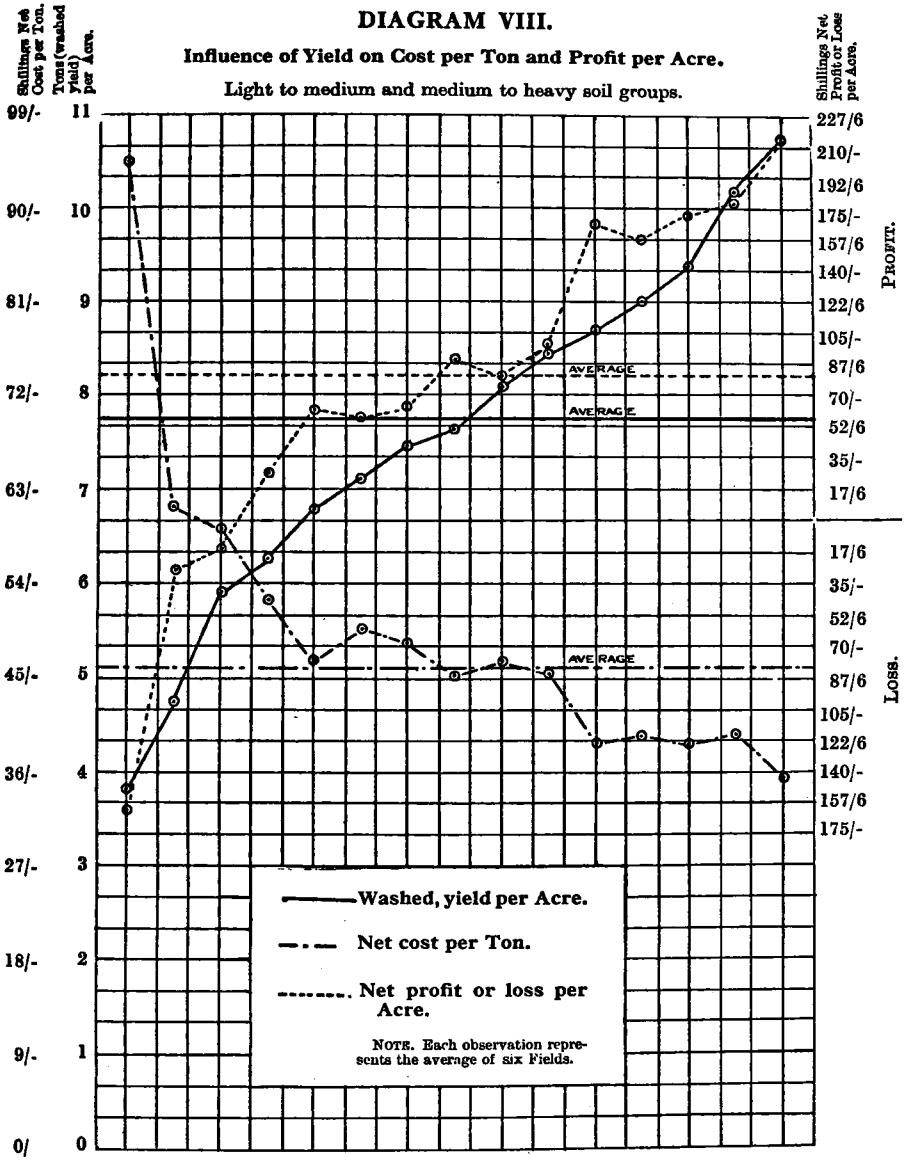
(e) *Receipts, Profits and Losses.*

The gross cash receipts per acre reflect both the washed yield and the sugar content of the different groups; while, expressed in terms of *per washed ton*, the receipts reflect the sugar content only. In connection with this latter figure, it is of interest to note that, although the light to medium, medium to heavy, and very light soil groups, each had the same average sugar content, the receipts per ton were 56*s.* 4½*d.*, 56*s.* 10¼*d.*, and 56*s.* 10*d.* respectively. There are several explanations of this apparent anomaly:—(*a*) For price fixing purposes the sugar content is taken only to the nearest decimal of a per cent.—i.e. to the nearest 3*d.* per ton, (*b*) bonuses for early deliveries, (*c*) the difference in price given for three-year and one-year contracts. Speaking broadly, however, the receipts were 6*s.* per ton in the case of the sewage beet, and 4*s.* per ton in the case of the fen beet less than in the other three groups, due entirely to a lower sugar content. On the other hand, higher yields of

DIAGRAM VIII.

Influence of Yield on Cost per Ton and Profit per Acre.

Light to medium and medium to heavy soil groups.



roots more than compensated for the deficiency in sugar. The influence of yield on cost per ton and profit per acre is illustrated graphically in Diagram VIII. To obtain this illustration fields in the light to medium and medium to heavy soil classes were arranged in ascending order of yield and then averaged in groups of six. It will be noticed that, where the yield is only 4 tons per acre, the net cost per ton is approximately 95*s.*, and the net loss per acre in the neighbourhood of £8. As yield increases cost per ton decreases with a corresponding improvement in profit per acre, until, with a yield of nearly 11 tons, the cost per ton is 36*s.*, and the profit per acre nearly £11. It is of interest to note that a yield of $6\frac{2}{3}$ tons corresponds with the zero line dividing profit and loss.

The relative success of the soil groups can, perhaps, best be seen in the following Table:

TABLE 21

COMPARISON OF CASH AND NET PROFITS AND LOSSES IN DIFFERENT SOIL GROUPS

Soil class.	No. of costs.	Cash profit (+) or loss (−). Per acre. £ s. d.	Cash profit (+) or loss (−). Per washed ton. s. d.	Net profit (+) or loss (−). Per acre. £ s. d.	Net profit (+) or loss (−). Per washed ton. s. d.
Sewage	5	(+) 4 16 11	(+) 10 $9\frac{3}{4}$	(+) 8 0 1	(+) 17 $10\frac{1}{4}$
Fen, Warp & Silt	37	(+) 2 12 $11\frac{3}{4}$	(+) 6 $1\frac{1}{4}$	(+) 6 1 $1\frac{3}{4}$	(+) 13 $11\frac{3}{4}$
Light to Medium	83	(+) 12 11	(+) 1 $7\frac{3}{4}$	(+) 5 1 $2\frac{1}{2}$	(+) 12 $10\frac{1}{2}$
Medium to Heavy	35	(−) 2 8 $9\frac{1}{4}$	(−) 6 $8\frac{1}{2}$	(+) 1 17 $1\frac{1}{2}$	(+) 5 1
Very Light ..	12	(−) 3 12 $9\frac{1}{2}$	(−) 16 $4\frac{1}{2}$	(−) 2 3 9	(−) 9 10
All together ..	172	(+) 5 $5\frac{1}{2}$	(+) $8\frac{1}{2}$	(+) 4 4 1	(+) 10 $10\frac{3}{4}$

CHAPTER V.

1. INFLUENCE OF SIZE OF FIELD

IT is perhaps a platitude to point out that in comparable cases the size of fields ("field" in this connection implying, not the area between hedges or fences, but the area under one crop worked as a unit) normally bears a definite relationship to the size of the farm, while the advantages of large units of production are mainly apparent when establishment charges are being considered. An explanation of the method of assessment of establishment charges for the purpose of this enquiry is given on an earlier page, but here it is necessary to remind readers that it was found impossible to attempt to vary these charges, with any hope of accuracy, according to the size of the unit of production. In the following comparisons of the economy of different sizes of field variation in establishment charges is not, therefore, reflected.

The table given below makes comparison of costs per acre on fields in the light to medium soil group.

TABLE 22

RELATIONSHIP BETWEEN SIZE OF FIELD AND COST OF PRODUCTION PER ACRE

	Size of Field											
	5 acres and under.			6 to 10 acres.			11 to 15 acres.			Over 15 acres.		
Number of examples ..	16			34			16			17		
Total Labour and Seed..	12	1	3¾	11	16	3½	10	10	2½	10	6	11¼
Manures	6	7	8¼	5	3	3	5	15	2	4	14	2¼
Rent, Rates & Estab. ..	2	18	5½	2	8	7¾	2	8	6¼	2	5	4¼
Farm Cash Cost ..	21	7	5½	19	8	2¼	18	13	10¾	17	6	5¾

These figures illustrate in a striking way the fall in the cost per acre as the size of the field increases. They show, too, that each of the component costs contributes its share to the general effect. For example, the fall in the cost per acre of labour between fields of 5 acres or less and fields over 15 acres in extent is 34*s.*, the decrease in the cost of manures 33*s.*, while rent and rates add to the cumulative effect with a difference of approximately 13*s.*, of which rates are responsible for 2*s.* 2¼*d.* and rent for the remaining 10*s.* 11*d.* The higher burden of rates in the smaller size group is undoubtedly due to the greater proportion of the total assessment occupied by farm-house and buildings. The difference in rent is partly due to the fact that, as a rule, the smaller farms are situated on the better class of soils and partly because the capital (landlord's) investment per acre on the smaller holdings is greater than on the larger farms.

The difference in total Farm Cash Costs between the "5 acres or less"

group and the "6 to 10 acres" group is £1 19*s.* 3¼*d.*; that between the "6 to 10 acres" group and the "11 to 15 acres" group is 14*s.* 3½d.; while between the "11 to 15 acres" group and the "over 15 acres" group the difference is £1 7*s.* 5*d.* The difference between the smallest and largest groups is no less than £4 0*s.* 11¾*d.*

The following Table compares the Gross Cash Receipts in the same four groups of fields which appeared in Table 22.

TABLE 23

GROSS CASH RECEIPTS PER ACRE ON DIFFERENT SIZED FIELDS

	Size of Field			
	5 acres and under.	6 to 10 acres.	11 to 15 acres.	Over 15 acres.
Number of Examples ..	16	34	16	17
Gross Cash Receipts ..	£22 11 3½	£23 0 9¾	£19 10 4¾	£22 10 6½

These figures suggest, somewhat unexpectedly, that the receipts per acre do not vary with the size of the field in the same way as do costs, for the two extreme groups register an entirely insignificant difference, while the comparatively small receipts from the "11 to 15 acres" group is due mainly to the fact that the crop on two of the fields included was a partial failure, a cause which can in no way be connected with the size of the field.

2. INFLUENCE OF FACTORS WHICH ARE UNDER THE CONTROL OF THE GROWER.

Any attempt to deduce from the figures emerging from the present enquiry lessons which might be of value as guides for future seasons in such matters as methods of cultivation, manuring, rate and date of seeding, etc., is rendered extremely difficult, and in many cases impossible, by the large number of variables involved. For this enquiry relates, not to experimental plots, each experiencing similar growth influences, but to fields distributed over a wide area of country. Soil, weather, variety of seed, distance of drill and plant, method and date of cultivations, type and quality of manures and date of application, date of thinning, preceding crop, pests, and inaccurate estimation of field areas, form only some of the many factors which, individually and collectively, influence the results and complicate comparisons. The enormous range in total costs and returns, as illustrated in Diagram VII, emphasises this point.

It is not unreasonable, however, to hope that at least indications of the influence of some of the major factors in the economics of sugar beet production might be obtained from such an enquiry as the present one, and in the following paragraphs are given the results of certain analyses carried out with this object in view. But, in discussing these results, the warning given above must be kept in mind, and they must be regarded as relating only to certain definite fields in a particular season. In no case must they be taken as evidence

on which it is possible to dogmatise. A second year's investigation should do much, however, to confirm or disprove these findings.

(a) *The Value of Farm-yard Manure.*

In attempting to assess the value of dung the results achieved on both the light to medium and medium to heavy soil groups have been amalgamated. The analysis, given in Table 24, relates to all the fields in these two soil groups *which were not subsoiled*, so that the possible influence of subsoiling on yield does not enter into the comparison of receipts.

TABLE 24

INFLUENCE OF FARM-YARD MANURE

	Average per acre figures.											
	Fields dunged.				Fields not dunged.				Difference.			
	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.	
Cost of Manures	7	8	9¾	51	2	17	9	45	4	11	0¾	
Gross Cash Receipts	22	5	6	49	20	0	10¼	44	2	4	7¾	*

The above results indicate that the cost of the farm-yard manure, *plus* the cost of carting and applying it, amounted to approximately £4 11*s.* 1*d.* The increase in receipts due to this dressing appears to be only some £2 4*s.* 8*d.* Even if half the cost of the dung is allowed as a credit to represent its residual value no advantage is apparent, the increase in net cost and gross cash receipts cancelling each other almost exactly.

(b) *The Value of Subsoiling.*

In this grouping the same two soil classes have been chosen (i.e. light to medium and medium to heavy) and the analysis given in Table 25 refers only to fields *which were not dunged.*

TABLE 25

INFLUENCE OF SUBSOILING

	Average per acre figures.											
	Fields subsoiled.				Fields not subsoiled.				Difference.			
	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.	
Cost of Preliminary Cultivations	3	6	9½	14	2	10	1¼	45		16	8	
Gross Cash Receipts	22	19	1½	14	20	0	10¼	44	2	18	3¼	†

From these figures it appears that subsoiling is of more value than a dressing of dung, the receipts on the subsoiled fields being £2 18*s.* 3*d.* greater than on those not subsoiled, while the extra cost of producing the increase is only 16*s.* 8*d.* In connection with this apparently low cost of subsoiling it must be remembered that the figure represents an average based on fields in which subsoiling was done, in some cases as a separate cultivation (when the cost

* Standard error of this difference = £1 2*s.* 7¾*d.*

† Standard error of this difference = £1 14*s.* 0*d.*

was practically equal to that of ploughing), and in some cases at the same time as ploughing, by means of a sub-soiling attachment, a method which considerably reduced the cost of the operation.

(c) *The Value of Subsoiling and Dung.*

One might expect to find that, if subsoiling and dunging, undertaken separately, result in certain increases in yield, when both are performed together the resultant increase should be equal to the sum of the two individual differences. In the analysis shown in Table 26 all the fields in the light to medium and medium to heavy soil groups which were *both subsoiled and dunged* are averaged in comparison with the results from fields which were neither subsoiled nor dunged.

TABLE 26

INFLUENCE OF FARM-YARD MANURE AND SUBSOILING

	Average per acre figures.											
	Fields both dunged and subsoiled.				Fields neither dunged nor subsoiled.				Difference.			
	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.	
Cost of Preliminary Cultivations and Manures	11	11	2	11	5	7	10½	45	6	3	3¾	
Gross Cash Receipts	24	9	3½	11	20	0	10½	44	4	8	5¼	*

While the difference shown above in receipts and costs is not quite equal to the sum of the differences shown in Tables 24 and 25, it certainly appears to add weight to the inference suggested by these two previous analyses.

(d) *Influence of preceding Crop.*

The orthodox place for beet in the farm rotation is the fallow shift, i.e. at the beginning of the rotation. Where this is the case the crop incurs cleaning and manurial costs which will benefit, possibly the whole of the following rotation and certainly the first and, perhaps, the second crop immediately succeeding it With the object of obtaining some indication as to the cultural and manuria. values of fallows and fallow crops an analysis was made of the fields on which beet was taken after (*a*) a straw crop and (*b*) a fallow crop or a bare fallow The results are shown in Table 27.

* Standard error of this difference = £2 4*s.* 4*d.*

TABLE 27

INFLUENCE OF PRECEDING CROP

	Average per acre figures.											
	Beet after bare fallow or fallow crop.				Beet after a straw crop.				Difference.			
	£	s.	d.	No.	£	s.	d.	No.	£	s.	d.	
Cost of Preliminary Cultivations	2	3	4¼	18	2	17	10¾	62	(—)	14	6½	
Cost of Manures	5	10	9	18	5	10	6½	62			2½	
Cost of Seed, Drilling and After Cultivations	3	13	8¾	18	3	14	0½	62	(—)		3¾	
Gross Cash Receipts	23	18	3¾	18	21	14	4½	62		2	3	11¼*

From these figures it appears that the cost of preparing a seed bed for beet following fallow crops is considerably less (by 14*s.* 6*d.*) than where beet follows a straw crop, while the receipts are almost £2 4*s.* 0*d.* in favour of the former rotation. Somewhat unexpectedly, no difference in the cost of manures and after cultivations is apparent, so that the net benefit to the beet (presumably due to the residual and cultural values inherited from the preceding fallow crops) is in the neighbourhood of £3 per acre. There is reason to believe, however, that 1927 being the last year of the full subsidy, many farmers took beet, not at the beginning of their rotation, but probably at the expense of a second straw crop. If this surmise is correct one would expect under normal circumstances an even greater difference in cost in favour of beet after a fallow crop than is shown above.

It is likely that this difference of £3 does not represent the total value of the residual effects due to the fallow crops, for more than the immediately succeeding crop may benefit from the fallow cultivations and manuring. If this is the case, then these figures seem to indicate that the methods followed in this enquiry in calculating residual values† are approximately correct, and suggest that a strong argument might be made out for taking two beet crops in succession.

(e) *Influence of Rate of Seeding.*

This factor has been investigated very fully at Experimental Stations and elsewhere, and it is also well known that the rate of seeding advocated by the factories is in the neighbourhood of 15 lb. per acre. Many growers, however, drill less than this amount while some drill more. Table 28 shows the results of an analysis of the light to medium and medium to heavy soil classes in ascending order of rate of seeding.

* Standard error of this difference = £2 1*s.* 10*d.*

† See page 7.

TABLE 28

INFLUENCE OF RATE OF SEEDING

Rate of seeding per acre	(1) Less than 12 lb.	(2) 12 to 12·9 lb.	(3) 13 to 14·9 lb.	(4) Exactly 15 lb.	(5) More than 15 lb.	(6) Standard deviation of the whole 94 yields.
Number of Costs	18	16	19	21	20	
Average date of Drilling ..	5th May	5th May	11th May	11th May	14th May	
Tons Washed Yield ..	6·810	7·509	7·927	8·269	7·525*	2·072

The steady increase in yield in the first four columns corresponding to the increase in rate of seeding is very apparent, and the continuity is marred only by the astonishing drop of almost exactly three-quarters of a ton in column (5) as compared with column (4). Some explanation of this *apparent* indication that the saturation point is reached at 15 lb. seed per acre is necessary. A clue is given in the line showing the average date of drilling, which demonstrates that the rate of seeding has been governed to a certain extent by the date at which drilling was done—viz. the later the date the greater the rate This point is further emphasised in the next paragraph. For the moment it is sufficient to say that, in spite of the later date of drilling, those fields which were seeded at the rate of 15 lb. per acre yielded nearly 1½ tons more than those which received less than 12 lb. of seed.

(f) *Influence of Date of Drilling.*

The results of any investigation into this factor must necessarily reflect to a considerable extent the conditions of the particular season to which they refer, for the presence or absence of certain weather conditions in the weeks immediately following drilling probably has more effect on the ultimate yield than abnormal conditions at later stages in the growth of the crop. In addition, it must be remembered that the factor of date of drilling is only partly under the control of the grower, for an inclement spring may greatly delay the preparation of a suitable seed bed. It is with a full appreciation of the above caution that the following analysis is given. It refers to the light to medium and medium to heavy soil groups arranged in order of the date of drilling.

TABLE 29

INFLUENCE OF DATE OF DRILLING

Date of drilling	(1) Before 1st May.	(2) 1st to 10th May.	(3) 11th to 19th May.	(4) After 19th May	(5) Standard deviation of the whole 89 yields.
Number of Costs	23	27	22	17	
Average rate of Seeding..	13·1 lb.	13·3 lb.	14·5 lb.	14·8 lb.	
Tons Washed Yield ..	8·314	7·957	7·805	6·417	2·026

* In this group are four yields of 3·983, 2·901, 4·944 and 3·297 tons, drilled respectively on 18th May, 28th May, 2nd June and 21st June.

The above figures should be studied in conjunction with those shown in Table 28, to which they are complementary. It will be noticed that the earliest drilled seed averaged the highest yield, and, as the date of drilling advanced, the yield fell even though the rate of seeding was increased. The most marked drop in yield occurs in those fields drilled after 19th May, which average nearly 2 tons per acre less than those drilled before the 1st of the month, and nearly 1½ tons less than those drilled between the 11th and 19th.

(g) *Distance between Drills.*

It is obvious that, within limits, the closer the drills the greater will be the number of roots and, consequently, the greater will be the yield per acre in comparable cases. The Continental practice of "drawing" drills at 12 or 14 inches is, however, impracticable in this country owing to the difference in labour conditions, but a distance of 18 inches appears not to interfere with cleaning operations by horse tackle. Many English growers set their drills more widely than 18 inches, and Table 30 demonstrates the effect on yield of these wider spacings. Both light to medium and medium to heavy soil-groups are included in this analysis, and it is of interest to note that the "average" distance of drill in these two soil types is 20 inches.

TABLE 30

INFLUENCE OF DISTANCE BETWEEN DRILLS

Distance between drills	(1) 19 inches and under.	(2) 19½ to 21 inches.	(3) 22 inches and over.	Standard deviation of the 109 yields.
Number of Costs	48	31	30	
Sugar Content	16·5%	16·5%	16·5%	
Washed Yield per Acre ..	8·176	7·492	7·003	2·12

From these figures it appears that the loss in yield which may result from wide drilling is considerable, the difference in yield between the most closely spaced group (column (1)) and the widest group (column (3)) being no less than 1·173 washed tons. As the average sugar content in all three groups is identical (16·5 per cent. in each) this difference in yield is equivalent (under the 1927 price) to £3 6*s.* 3*d.* per acre in favour of the closest spacing.

(h) *Ridge and Flat Work.*

For the purpose of comparing the results obtained under these two different systems of management attention has been confined to the light to medium soil class in which there are 10 examples of ridge work and 73 examples of flat work. Table 31 shows the results of this comparison.

TABLE 31

COMPARISON OF RIDGE WITH FLAT WORK

	Average per acre figures.		
	10 Ridged fields.	73 Flat fields.	Difference.
	£ s. d.	£ s. d.	
Preliminary Cultivations	3 0 6¾	2 13 6¼	7/0½
Seed, Drilling and After Cultivation..	3 7 2¾	3 14 6	(—) 7/3¼
Harvesting	3 18 7¼	4 10 5¾	(—) 11/10½
Total Labour and Seed	10 6 4¾	10 18 6	(—) 12/1¼
Washed Yield (Tons)	7·576	7·901	0·325
Tare	14·17%	16·63%	2·46%
Sugar Content	16·5%	16·5%	—
Gross Cash Receipts	21 8 0½	22 6 4⅜	(—) 18/4¼

From the above it appears that ridging increased the cost of preliminary cultivations by 7*s.* 0½*d.* an acre but that this was more than counter-balanced by a decrease in the cost of seed, drilling and after-cultivations of 7*s.* 3¼*d.*, and in harvesting of 11*s.* 10½*d.* per acre; the net result being a decrease in cost (in favour of ridge work) of 12*s.* 1¼*d.* an acre. But the smaller yield on the ridge (7·576 tons as compared with 7·901 tons on the flat) was equivalent to 18*s.* 4¼*d.* an acre, which left an insignificant balance (6*s.* 3*d.*) in favour of flat work. It is of interest to note that the average percentage tare of the beet grown on the ridge was 14·17 per cent., as against 16·63 per cent. on the flat, a difference equal to approximately six hundredweights per acre.

CHAPTER VI.

1. CASUAL LABOUR

THE demand for casual labour in the production of sugar beet is governed mainly by (*a*) the extent to which beet is made to replace other fallow crops, (*b*) the standard of efficiency in managing the crop. These two factors can, of course, act either individually or in combination. Where beet merely replaces part of the normal root break no very great demand for casual labour is likely to arise. Where beet is grown in addition to, or in excess of, the normal root break it will be necessary to employ outside labour or else to neglect either the cultivation of the beet or other departments of the farm. The extent to which a demand for casual labour will arise is also, no doubt, dependent on the amount of casual labour available, for an efficient manager will undoubtedly aim at making the beet crop disorganise his normal work as little as possible. In 1927, however, many farmers grew a larger proportion of beet than they are likely to do under the new contract prices, and, for this reason, it is unlikely that the demand for outside labour will, in future, exceed that created during the past season. If this surmise is correct it follows that evidence relating to the supply of, and demand for, casual labour in 1927 can be of little more than historic interest.

A demand for casual labour was created on 84 per cent. of the farms under review. Of this proportion 25 per cent. had difficulty in getting as much outside labour as was wanted. Accurate figures relating to the number of days additional employment thus created are obtainable on only 21 farms (representing 570 acres of beet); these show a range of from 2 to 18 days casual labour employed per acre of beet grown, with an average of five days. Female and juvenile labour supplied the bulk of this demand, which was distributed fairly evenly between the thinning and harvesting periods. At no other time of the year was there any demand for outside help. As the area of beet grown on these 21 farms is equal to 9 per cent. of their total arable acreage, and as the similar figure for all the 100 farms together is 11·5 per cent.* it is possible that, as a representative figure, the number of days casual employment may be slightly underestimated at 5. On the other hand, it must be remembered that 16 out of the 100 farms employed no casual labour, and this fact should counteract the low proportion of beet to total arable on those farms for which details of casual employment were available.

* See Appendix A.

2. PULP

The question of shortage of supplies of this by-product has been a burning one since it was raised, first in the *Farmer and Stock-breeder*, and in both Houses of Parliament in February last. With a view to discovering to what extent those farmers who were co-operating in the present enquiry were affected by the point at issue a circular letter was sent to each. From the answers to this enquiry it appears that 53 per cent. of the growers bought pulp, and of these, 26 per cent. had difficulty in getting as much as they wanted, but in all the cases of unsatisfied demand, the explanation was either (*a*) the farmer wanted more than his *quota*, or (*b*) the full requirements had not been contracted for before the specified date. Of the 47 per cent. of growers who bought no pulp the reason in all cases was, not that supplies were not available, but that none was wanted. It is probable that the publicity accorded to this matter during recent months has been of great value in advertising the advantages to be gained by using this by-product, and that an increasing number of growers will in future exercise their privilege of obtaining some pulp at a below market price by ordering the supplies they require within the time limit allowed by the factories. Critics of the farmer must appreciate the fact, however, that it is very difficult for the grower to estimate his winter's requirements at so early a date as the 1st of July.

It has been suggested elsewhere that sugar beet growing will in future occupy an ever increasing proportion of the root break, i.e. that beet will not form a cash crop grown *in addition to*, but a cash crop substituted for, the normal root break. Whenever this occurs there is bound to be a reduction (other things being equal) in the supply of home-grown stock foods, a reduction which must be made good by an additional outlay in purchased foods, unless the whole policy of the farm is to be modified. It would appear then that, so far as the economy of the farm *as a whole* is concerned (as opposed to the economy of the sugar beet crop alone), the additional outlay in costs and in food-stuffs (e.g. pulp) necessitated by the growing of beet must be set off against the additional cash returns obtained when any comparison of the relative financial results of sugar beet and, say, mangolds, is made. Many factors complicate any general comparison in figures, e.g. whether mangolds are manufactured into baby beef, stores, mature beef, milk, or mutton; the knowledge of scientific rationing possessed by the farmer; the farmer's dependence on a quick turnover, etc. The following might, however, represent a hypothetical case: With beef and mutton prices at their present level, mangolds (given an average yield and cost per acre) cannot at the best do more than pay for their cost of production. On the other hand, an 8½ ton crop of beet, at 16½ per cent. sugar content, will sell, under the 1928–30 price, at approximately £21 per acre, and in addition £3 worth of tops will be available for feeding to stock. The cost of production of the beet (inclusive of the tops) may be taken at £20, which shows a balance in favour of the beet of £4 per acre.

But sugar beet costs approximately £3 per acre more than do mangolds, so, if it is presumed that food-stuffs to replace the dispossessed mangolds can be purchased as cheaply as their mangold equivalent costs to produce, then the net balance in favour of growing beet in place of mangolds will be £1 per acre. It is hoped that this matter may be accorded a fuller discussion in the publication to be issued next year.

3. IMPLEMENTS

There seems to be some scope for the introduction of suitable new implements to assist in the production of beet—particularly in reference to the operations of drilling and harvesting. Capital outlay on special appliances, however, has, up to the present, been very limited; many growers using adapted, or even unadapted, implements already in use on their holdings, or making comparatively insignificant investments in specialised beet-lifting tools. It is not meant to infer that heavy capital outlay in appliances is in itself a virtue or an economy, but only that it seems reasonable to expect, as time goes on, improvements in the implements used for the most costly of the five headings (i.e. harvesting) into which Farm Cash Costs naturally fall. It is to be hoped that these improvements will develop rapidly and will be made available at a cost within the range of the grower of even five acres.

Capital outlay in lifting implements on the farms under review has been confined mainly to the larger growers. On 37 farms, growing altogether 1087 acres of beet (or an average of 30 acres each), the capital outlay on special implements was £240. This is equivalent to an average outlay of £6 10*s*. 0*d*. per farm, and 4*s*. 6*d*. per acre of beet. The expenditure did not vary proportionately with the area under beet; thus, farm 104 grew 130 acres of beet and invested only £7 in implements, while farm 139, growing only 3 acres, expended £2 10*s*. 0*d*. Again, farm 145 grew 38 acres and expended £30 on special implements, while farm 153 made an outlay of only £2 for 14 acres. It seems unlikely that capital for special implements to facilitate production has hitherto exceeded an average of 1*s*. 6*d*. per acre of the total area (in 1927) of beet in England and Wales. If this figure is approximately correct, there has been an addition of some £16,000 in the turnover of implement manufacturers due directly to the crop.

4. RISK OF FAILURE

Failure is, of course, a risk which any business man considers either consciously or unconsciously in planning his organisation. In industry, where the price is often fixed by the producer, an allowance for this risk is, where possible, taken into consideration when placing an article on the market. In agriculture, except for those few commodities which are subject to collective bargaining, the producer has no opportunity of covering himself in such a way.

Sugar beet is, fortunately, one of the commodities which are subject to collective bargaining, and, for this reason, the risk of failure is an item worth considering. This risk may be due either to factors over which the grower has no control, or to factors for which he is directly responsible. In the majority of cases of failure it is very difficult to apportion the responsibility with any certainty of justice. Apart from this, failures may be divided into two headings—(*a*) complete and (*b*) partial.

Of the 2303 acres on which costings work was commenced, 36 acres (or 1·56 per cent.) were a complete failure. This acreage comprised five fields, of which three were of light to medium and two of medium to heavy soil. The total cost of these fields up to the time of ploughing up was approximately £427, representing a charge of almost 4*s*. per acre on the over-all harvested acreage. The risk of complete failure thus appears to be comparatively insignificant.

In assessing the risk of partial failure it is necessary to come to some hypothetical decision as to what constitutes this qualification. Obviously, soil groupings must be considered, for a partial failure on, say, fen soil might be an exceptionally good yield on the very light soils. For the present, certain arbitrary figures have been chosen for the different soil groups, figures which roughly represent yields below which the crop could hardly prove (under 1927 prices) an economic proposition. The following Table gives these arbitrary figures, together with the fields on which the washed yields fell below the standard.

TABLE 32

PARTIAL FAILURES

Light to medium soils (below 5½ tons).		Medium to heavy soils (below 6 tons).		Fen, warp or silt soils (below 6½ tons).		Very light soils (below 4½ tons).		Sewage farms (below 6 tons).	
Field.	Yield.	Field.	Yield.	Field.	Yield.	Field	Yield.	Field.	Yield.
100	4·399	32	3·297	89	3·960	16	4·445	—	—
146	2·572	33	5·692			134	2·353		
155	3·019	41	4·677			135	4·267		
158	4·974	51	3·983			136	3·774		
161	4·385	52	3·757			137	3·426		
		88	4·545			151	3·803		
		96	4·776						
		126	2·901						
		181	5·793						
		188	4·944						

These figures are expanded in Table 33.

TABLE 33

PARTIAL FAILURES

	Light to medium.	Medium to heavy.	Fen, warp or silt.	Very light.	Sewage.	All together.
Acres partial failure ..	58	81	3	101½	—	243½
Acres partial failure, expressed as a % of total group acreage	5·4%	19·1%	0·6%	45·1%	—	10·6%
Total net loss realised on partial failures	£219	£496	£7	£325	—	£1047
Net loss on partial failures, expressed in money values per acre of harvested group acreage	4/2	23/2	3d.	29/5	—	9/3

If we accept the arbitrary yield figures on which the above two Tables are based, it appears that to the cover of 4*s.* an acre against total failure must be added a further 9*s.* 3*d.* to cover risk of partial failure. But this whole argument is, unfortunately, rather hypothetical on account of the absence of a definition of the term "partial failure." In addition, the critical point must be changed to meet alterations in contract price, for, obviously, the lower the price the higher must be the yield if costs are to be defrayed. Thus under the 1928–30 price the risk of partial failure, expressed in terms of money per acre, will be greater than 9*s.* 3*d.*

5. COST OF PRODUCING GRANULATED WHITE SUGAR.

The following Table gives some idea of the distribution of the costs of producing granulated white sugar as bought by the housewife. The prices given are the average of those ruling during the 1927–8 sugar beet campaign. The yield (7·711 tons washed) and sugar content (16·1 per cent.), as well as the farm cash and net costs, are the average of the 172 fields from which yield *data* were obtained. In the calculation of the yield of white sugar it has been estimated that 21 per cent. of the sucrose in the beet was not refined, and an allowance for this has been made.

TABLE 34

DISTRIBUTION OF COSTS OF PRODUCTION PER CWT. OF GRANULATED WHITE SUGAR

	Per cwt. of white sugar produced.								
	Cash farm figures.						Net farm figures.		
	£	s.	d.		£	s.	d.		
Cost incurred by farmer	£1	1	5¾		£0	17	5¾		
Farmer's profit	£0	0	3¼		£0	4	3¼		
Cost to the factory				£1	1	9			
Margin for factory costs and profit, exclusive of subsidy and by-products					7	0			
Wholesale price ex factory				£1	8	9			
Margin for dealer's and retailer's cost and profit					6	3			
Retail price of granulated sugar to housewife at 3¾d. per lb.				£1	15	0			

It must be emphasised that the factory cost and profit shown above does not by any means represent the whole amount of the factory's margin. For to this 7*s.* must be added 19*s.* 6*d* subsidy on white sugar and about 2*s.* 1*d.* for subsidy on molasses, 2*s.* 4*d.* for the selling price of the pulp produced and about 1*s.* 3*d.* for the selling price of molasses. From this total of 32*s.* 2*d.* per cwt. of white sugar (which incidentally includes no allowance for such additional by-products as press-cake or lime) must be deducted an Excise Duty of 7*s.* $4\frac{2}{3}$*d.*, leaving a net margin for factory working costs and profit of approximately 24*s.* 9*d.* per cwt. of white sugar.

If the subsidy on sugar and molasses is added to the market value of the by-products and the selling price of the sugar produced it appears that, even after deducting the Excise Duty, the factories' net receipts per cwt. of white sugar (in 1927) cannot have been less than 46*s.* 6*d.*, or more than double those of the grower. In the light of these figures it is clear that the factories have no cause to complain in bearing the larger proportion of the loss in revenue occasioned by the recent reduction in the subsidy. It is to be hoped, too, that it will not be necessary, when the subsidy again falls in 1931, for the price of beet to be cut to a corresponding extent.

Foreword to Appendices

THESE Appendices have been printed in some detail, as it is considered probable that investigators may wish to carry out analyses and comparisons which, for various reasons, are not incorporated in the text of this publication. Throughout the Appendices a dash (—) indicates that there are no *data*, and a question mark (?) that the *data* have not been recorded. All averages in the Appendices, as in the text, are arithmetic unless otherwise stated.

APPENDIX A.

GENERAL ECONOMIC DATA.

Farm Number.	General Description of Soil.	Total Acreage.	% Arable.	Rent and Rates per Acre.	Density per 100 Acres.*		Number of Tractors.†	Total Beet Grown expressed as a % of Total Arable.			1927 Beet Crop actually Costed.		Factories Supplied.	Approximate Road Distance (Miles) to Factory.
					Labour.	Horses.		1925	1926	1927	Number of Fields.	Acres.		
101	Light over chalk ..	740	93	23/9	3·4	2·7	1	3·6	8·7	10·9	1	60	Bury, Ely and Wissington.	14, 14 and 30.
102	Sandy loam ..	647	86	25/9	3·5	2·8	1	13·8	16·1	18·7	6	100	Bury	2.
104	Light loam.. ..	465	86	23/4½	3·9	2·4	1	7·5	16·0	32·5	3	56½	Bury	4½.
105	Light mixed ..	236	58	29/1	2·5	3·4	—	—	3·7	4·4	1	6	Bury	35.
106	Light over chalk ..	310	92	27/-	2·9	2·6	1	2·1	7·0	10·6	1	12	Bury and Felstead	40 and 30.
107	Very light ..	602	88	12/9½	4·0	3·3	—	5·3	8·7	11·7	3	62	Bury and Ely ..	4 and 30.
108	Strong loam ..	1015	75	33/3½	4·5	3·4	—	2·1	5·2	7·8	2	40	Bury	11.
109	Light chalk ..	450	93	23/3	2·7	3·1	2	1·2	1·2	3·6	1	15	— —	—
110	Gravel loam ..	280	54	24/6½	3·6	2·5	—	5·3	11·3	18·0	4	27	Bury and Ipswich	23 and 23.
111	Light to medium ..	1400	57	23/4½	4·3	3·2	1	15·0	27·5	31·3	2	80	Bury and Cantley	40 and 25.
112	Medium loam ..	1000	80	35/-	4·0	3·0	1	—	8·1	8·1	1	11	Cantley and Spalding.	45 and 50.
113	Mixed on sand ..	760	62	32/9	4·5	2·4	—	2·1	2·1	2·1	1	10	Cantley and Lynn	40 and 22.
113A	Clay loam ..	440	91	33/5	3·4	3·0	—	6·0	4·5	7·3	1	29	Cantley	40.
114	Light sand ..	1000	95	32/5	4·4	3·0	—	4·5	4·8	4·5	1	27	Cantley	40.
115	Heavy	700	80	23/9½	5·3	2·9	1	0·7	1·5	1·5	1	8	Bury	11.
116	Clay	151	64	20/11½	3·0	2·7	—	7·8	10·0	12·5	1	12	Bury and Felstead	30 and 13.
117	Sandy loam ..	70	64	33/3½	4·3	4·3	—	6·7	13·3	21·1	2	9½	Bardney and Kelham.	9 and 35.
118	Mixed	441	57	28/-	2·0	2·3	1	2·8	2·8	4·0	1	10	Bardney	6.
119	Sandy loam ..	138	61	33/10	3·6	2·9	—	3·6	3·6	3·6	1	2½	Kelham	35.
120	Sand and warp ..	242	66	45/-	3·5	4·1	1	3·8	3·8	3·8	2	6	Kelham	40.
121	Sand to strong loam	490	69	38/4½	2·9	2·9	—	—	1·8	4·4	1	10	Colwick and Selby	45 and 45.
122	Clay and sand ..	197	63	30/7	2·5	2·5	1	12·9	3·2	14·5	1	18	Kelham and Bardney.	30 and 15.
123	Fen	600	88	34/10	3·3	3·3	3	3·4	3·4	8·8	3	46	Kelham and Bardney.	22 and 3.
124	Medium loam ..	350	80	30/5½	2·9	2·3	—	3·2	3·2	5·0	1	14	Kelham and Bardney.	25 and 6.
125	Medium on sand ..	240	71	35/-	2·9	2·9	—	—	4·7	9·1	3	15½	Selby	60.
126	Mixed loam ..	144	79	37/10	4·2	4·9	—	8·8	10·5	14·0	2	16	Cantley	25.
127	Heavy loam ..	600	58	21/8	2·5	2·3	—	—	1·7	3·4	1	12	Felstead	20.
128	Strong	282	73	23/2½	3·2	2·5	1	—	17·0	6·8	1	10	Felstead	31.
129	Light loam.. ..	112	89	21/5½	4·5	3·6	1	5·0	11·0	10·0	1	10	Ely	28.
131	Sandy loam on clay	156	98	42/9½	5·1	5·1	—	2·6	11·7	18·3	3	28	Cantley	13.
132	Sandy loam on clay	210	86	27/-	3·1	2·5	—	?	?	5·5	1	4	Felstead	30.
133	Chalk and gravel loam.	54	85	41/3	5·6	3·7	—	2·2	8·7	9·8	1	4½	Ely	40.
135	Heavy clay ..	991	84	23/3	3·0	2·7	2	0·6	1·2	1·2	1	2½	Bury	12½.
136	Strong loam ..	550	87	29/1½	4·7	3·8	1	7·5	7·5	9·6	6	46	Cantley and Ipswich.	32 and 24.
137	Heavy clay ..	507	40	19/1½	4·0	2·2	1	—	5·0	5·0	1	10	Peterboro' ..	40.
138	Strong loam ..	160	69	40/3	5·6	3·8	—	—	1·8	2·5	1	2½	Peterboro' ..	30.
139	Gravel loam ..	178	64	76/3½	6·7	2·8	1	—	1·8	2·6	1	3	Peterboro' ..	30.
141	Heavy	392	61	15/10½	2·5	2·8	1	2·1	3·6	4·8	2	11½	Bury	55.
142	Loam on clay ..	380	68	34/1½	5·8	2·6	1	4·6	6·9	6·9	3	18	Cantley	20.
143	Fen	1411	96	50/11	5·7	5·0	2	11·8	11·8	12·5	1	10	Ely	6.
144	Gravel loam ..	500	60	27/6	2·0	2·0	—	2·7	6·0	6·0	1	18	Colwick and Peterboro'.	40 and 10.
145	Loam on gravel ..	418	55	30/1½	2·9	2·2	1	10·0	16·5	16·5	1	38	Peterboro' ..	15.
146	Very mixed ..	990	66	28/8	4·5	2·7	2	2·3	2·3	7·7	1	13½	Cantley	20.
149	Fen	370	68	51/1	5·4	4·3	—	—	4·0	4·0	1	10	Bardney	10.
150	Light over limestone	788	68	28/9½	3·0	2·0	2	—	—	2·8	1	15	Kelham	16.
151	Sewage farm on sand	300	83	27/8	4·0	3·3	1	6·0	9·2	12·8	1	32	Kelham and Colwick.	12 and 20.
152	Loam and heath ..	205	64	35/10	2·9	2·4	1	2·3	5·3	5·3	2	7	Kelham and Bardney.	20 and 4.
153	Very mixed ..	800	75	27/3	2·0	2·1	—	—	2·3	2·3	3	14	Kelham and Bardney.	20 and 3.
154	Gravel	73	96	25/5½	4·1	4·1	—	2·9	5·7	8·6	1	4	Bardney	4.
155	Mixed loam ..	73	73	34/2	4·1	4·1	—	3·8	7·6	9·4	1	5	Kelham	20.
156	Gravel loam ..	70	69	35/5	4·0	4·3	—	—	7·3	16·7	1	4	Bardney	7.
157	Sandy loam and clay	485	75	31/5½	4·1	3·1	1	2·2	4·1	5·5	1	20	Cantley	12.
158	Loam	312	87	31/5	5·8	3·1	2	11·0	11·0	16·5	1	30	Bury	9.
160	Black fen	144	100	47/1	4·2	5·6	1	—	3·5	3·8	1	5½	Peterboro' ..	4.
162	Medium to heavy..	95	68	46/-	3·2	5·3	1	—	3·1	6·2	1	4	Peterboro' ..	7.
163	Light	162	95	12/0½	3·1	2·5	—	3·9	5·2	5·2	1	8	Cantley and Lynn	33 and 24.
164	Light on limestone..	450	71	28/5½	2·0	2·2	1	—	5·6	5·3	1	17	Kelham	20.
166	Fen	44	77	74/6	4·6	4·6	—	5·9	17·8	26·5	1	9	Peterboro' and Spalding.	8 and 12.
167	Limestone	1353	33	20/4	0·9	1·0	—	—	2·2	4·4	3	20	Peterboro' ..	6.
168	Medium fen ..	196	87	72/8	5·1	4·6	1	8·8	8·8	8·8	2	15	Spalding, Peterboro' and Ely.	24, 22, and 2
169	Good fen	215	94	73/9	4·0	5·6	—	2·0	4·4	7·9	1	11	Ely	20.
170	Light fen	331	91	46/9	3·0	4·2	1	50·0	53·3	42·7	8	128	Ely	13.
171	Fen on gravel ..	470	47	65/4	2·6	2·6	1	24·5	24·5	28·4	5	62½	Ely	10.
172	Fen on gravel ..	120	100	55/4	2·5	3·4	—	—	16·6	36·6	2	44	Ely	14.
173	Fen on gravel ..	200	75	55/4	4·3	6·0	—	—	28·7	28·7	2	43	Ely	14.

* Excludes casual labour. † Excludes tractors hired.

Farm Number.	General Description of Soil.	Total Acreage.	% Arable.	Rent and Rates per Acre.	Density per 100 Acres.*		Number of † Tractors.	Total Beet Grown expressed as a % of Total Arable.			1927 Beet Crop actually Costed.		Factories Supplied.	Approximate Road Distance (Miles) to Factory.
					Labour.	Horses.		1925	1926	1927	Number of Fields.	Acres.		
175	Medium loam ..	98	65	27/1½	4·1	4·1	—	6·6	14·1	14·8	1	9½	Ipswich	21.
177	Clay loam	180	100	34/6½	3·8	1·7	1	—	3·9	12·2	2	9	Felstead	15.
178	Light loam.. ..	200	80	34/6	4·0	4·0	—	3·1	5·0	6·3	2	10	Cantley	15.
‡179	Boulder clay ..	20	50	15/-	7·5	hired	—	—	12·5	12·5	1	1½	Ipswich	22.
‡180	Very light ..	47	100	12/9½	2·1	hired	—	—	8·5	8·5	1	4	Ipswich	20.
181	Light to clay loam..	262	97	24/-	2·8	2·3	1	—	2·2	2·4	1	6	Felstead	17.
182	Sandy	74	100	14/4	1·4	2·7	—	—	100·0	100·0	4	73	Ipswich	10.
183	Sewage farm on sand	541	55	32/3½	3·1	2·2	1	5·1	5·1	11·5	4	34½	Cantley	11.
184	Light loam on chalk	750	95	23/6	4·8	5·1	—	2·8	5·6	3·4	1	24½	Bury	3.
185	Mixed	450	82	29/2	3·3	2·7	—	4·1	9·5	10·0	1	37	Bury	3½.
186	Light loam.. ..	1179	21	14/5	1·3	0·7	—	7·3	—	4·9	1	12	Bury	14.
187	Very light ..	714	60	9/6	2·1	1·8	—	9·3	7·9	4·2	1	18	Bury	15.
188	Chalk marl and heavy.	420	83	28/6	3·3	2·6	1	1·2	1·2	1·2	1	4	Ely	22.
189	Silt loam	400	90	38/6	6·2	4·0	1	2·8	6·9	8·3	1	30	Lynn and Spalding	16 and 16.
190	Skirt	50	76	35/7	5·0	4·0	—	—	5·3	5·3	1	2	Bury	20.
191	Very light ..	999 §	22	6/3	1·0	1·0	1	8·2	13·6	22·7	1	6½	Ipswich	17.
192	Gravel loam ..	137	62	34/1	2·9	2·9	—	9·4	9·4	12·9	2	11	Ipswich	20.
193	Light to loam ..	1700	50	29/-	4·1	2·0	2	5·9	9·9	11·0	7	93½	Ipswich	8.
194	Light	230	87	23/3½	4·3	4·3	—	8·0	8·0	11·5	1	23	Ipswich	5½.
195	Mixed on gravel ..	576	80	30/2½	4·7	3·5	—	2·2	5·0	5·0	1	23	Ipswich	4.
196	Light loam.. ..	800	50	29/8½	3·5	1·8	1	6·8	7·5	11·3	4	37	Ipswich	12.
198	Skirt	54	70	52/5	3·7	7·4	—	7·9	15·8	18·4	2	7	Ely	9.
199	Mixed loam ..	30	73	35/4	?	?	—	—	—	31·8	1	7	Ipswich	5½.
200	Clay loam	168	84	35/9	5·4	4·2	1	4·2	7·0	6·5	1	9½	Ipswich	5.
201	Heavy	580	74	24/5½	2·9	2·4	1	4·7	9·3	8·6	1	14	Ipswich	7.
202	Light chalk ..	400	72	34/-	2·5	3·0	—	—	4·2	7·5	2	21½	Spalding	40.
204	Very light ..	881	50	20/4½	3·6	2·2	3	2·3	2·3	26·8	3	117	Ely	30.
205	Chalk loam and clay	215	81	36/-	5·1	3·7	—	9·7	12·0	12·0	2	20	Ely	18.
206	Fen	260	90	55/-	5·0	6·2	—	17·0	20·0	23·8	4	56	Ely and Peterboro'	30 and 18.
208	Mixed heavy ..	251	88	29/4	4·8	4·0	1	1·8	4·5	6·4	2	14	Bury	14.
209	Black fen	760	79	52/6	5·3	5·5	2	4·2	10·0	15·0	2	27	Ely	15.
210	Medium loam ..	400	?	35/-	?	?	?	?	?	?	4	63	Kelham	45.
‡211	Very mixed ..	426	61	30/4	5·4	3·3	1	1·2	3·1	4·8	1	9½	Ely	21.
212	Light loam.. ..	236	98	33/4½	3·4	2·1	2	1·3	3·0	3·0	2	7	Felstead and Bury	45 and 50.
213	Alluvial silt ..	250	98	38/6	5·6	4·0	1	2·8	4·9	3·9	1	9½	Spalding	8.
	Totals and averages	42,993	75	33/10½	3·8	3·2	63	4·5	8·9	11·5	182	2303	—	20½.
	Number of items ..	100	99	100	98	98	—	98	98	99	—	—	—	99.

* Excludes casual labour. † Excludes tractors hired. ‡ Experimental farm.

§ Includes 750 acres heath, for which only a nominal rent is paid.

APPENDIX B.

FIELD DATA.

Farm Number.	Field Number.	Soil* Class.	Acres.	Preceding Crop.	Variety of Seed.†	Seed lb. per acre.	Mean Date of Drilling.	Ridges or Flat.	Distance (ins.) between Drills.	Distance (ins.) between Plants	Succeeding Crop.
101	1	L.-M.	60	Sainfoin, Wheat	Mixed	14·0	May 23	Flat	24	8	Barley.
102	2	L.-M.	10	Wheat ..	K.W.	16·0	May 18	Flat	24	8–9	Barley.
	3	L.-M.	29	Barley ..	K.W.	12·9	April 29	Flat	24	8–9	Barley.
	4	L.-M.	11	Barley ..	K.W.	18·2	April 22	Flat	24	8–9	Barley.
	5	L.-M.	17	Barley ..	K.W.	19·0	April 25	Flat	24	8–9	Barley.
	6	L.-M.	25	Oats	K.W.	15·4	April 10	Flat	24	8–9	Barley.
	7	L.-M.	8	Roots	K.W.	16·3	May 13	Flat	24	8–9	Barley.
104	8	L.-M.	10	Wheat ..	Mixed	10·0	May 11	Flat	24	6	Colesced.
	9	L.-M.	10½	Oats	Mixed	9·8	April 4	Flat	24	6	Swedes and Tares.
	10	L.-M.	36	Barley ..	Mixed	10·5	April 27	Flat	24	6	Barley.
105	12	L.-M.	6	Barley ..	Mixed	15·0	May 4	Flat	21	7	Barley.
106	13	L.-M.	12	Wheat ..	K.W., Horning	12·0	April 23	Flat	22	9	Barley.
107	14	V.L.	26	Bare fallow ..	Mixed	20·0	April 25	Flat	19	7	Sugar beet.
	15	L.-M.	14	Bare fallow ..	Mixed	20·0	May 16	Flat	19	7	Sugar beet.
	16	V.L.	22	Rye	Mixed	20·0	June 1	Flat	19	7	Sugar beet.
108	17	M.-H.	16	Barley ..	K.W., Kuhn ..	12·0	May 7	Flat	22½	8	Wheat.
	18	M.-H.	24	Wheat ..	K.W.	12·0	May 2	Flat	22½	8	Wheat.
109	21	L.-M.	15	?	?	14·0	?	Flat	22	9	?
110	22	M.-H.	5	Wheat ..	Mixed	12·0	June 6	Ridge	24	9	Oats.
	23	L.-M.	7	Sugar beet ..	Mixed	17·1	May 18	Flat	18	9	Barley.
	24	L.-M.	7	Roots	Mixed	17·0	May 6	Flat	18	9	Barley.
	25	L.-M.	8	Barley ..	Mixed	17·0	April 20	Flat	18	9	Barley.
111	26	L.-M.	40	Oats	Mixed	15·0	May 17	Flat	20	12	Barley.
	27	L.-M.	40	Barley ..	Mixed	15·0	May 1	Flat	20	12	Barley.
112	28	M.-H.	11	Oats	Schreiber ..	20·0	May 2	Flat	19	9	Barley.
113	29	L.-M.	10	Carrots ..	Dippe	15·0	May 18	Flat	20	9	Oats.
113A	30	M.-H.	29	Barley ..	Dippe	15·0	May 1	Flat	20	9	Barley.
114	31	L.-M.	27	Peas	Dippe	15·0	April 26	Flat	20	8	Carrots.
115	32	M.-H.	8	Barley ..	K.W.	16·0	June 21	Flat	26	9	Barley.
116	33	M.-H.	12	Sugar beet ..	K.W., Schreiber	16·0	May 31	Flat	21	8	Barley.
117	34	L.-M.	3½	Sugar beet ..	Kuhn	15·0	April 30	Flat	21	8	Oats.
	35	L.-M.	6	Wheat and potatoes.	Kuhn	15·0	May 18	Flat	21	8	Sugar beet.
118	36	L.-M.	10	Wheat ..	Kuhn	15·0	May 18	Flat	20	8–9	Barley.
119	37	L.-M.	2½	Oats	Dippe	14·0	May 12	Ridge	22	7	Barley.
120	38	F.	2½	Potatoes ..	K.W.	14·2	May 3	Ridge	21	8–9	Oats.
	39	V.L.	3½	Sugar beet ..	K.W.	13·9	May 13	Ridge	21	8–9	Potatoes.
121	40	L.-M.	10	Barley ..	Mixed	12·0	May 19	Ridge	18	7	Carrots.
122	41	M.-H.	18	Wheat ..	Schreiber ..	15·0	?	Flat	20	7	Barley.
123	42	F.	26	Potatoes ..	Mixed	18·0	May 12	Flat	21	8–9	Wheat.
	43	F.	10	Barley ..	K.W.	18·0	May 24	Flat	21	8–9	Oats.
	44	F.	10	Potatoes ..	K.W. "E." ..	18·0	April 27	Flat	21	8–9	Wheat.
124	45	L.-M.	14	Barley ..	Strube, Kuhn	14·0	May 23	Flat	18	8–9	Barley.
125	46	L.-M.	3½	?	K.W. "E." ..	14·0	May 9	Ridge	18	7	?
	47	L.-M.	4	?	K.W. "E." ..	15·0	May 4	Ridge	18	7	?
	48	L.-M.	8	?	K.W. "E." ..	14·0	June 3	Ridge	18	7	?
126	49	L.-M.	7	Barley ..	Kuhn	9·0	May 4	Ridge	21	9	Barley.
	50	L.-M.	9	Barley ..	Kuhn	18·0	April 28	Flat	18	9	Barley.
127	51	M.-H.	12	Wheat ..	Kuhn	16·7	May 17	Flat	22	9	?
128	52	M.-H.	10	Wheat ..	Schreiber ..	15·0	?	Flat	22	9	Oats.
129	53	L.-M.	10	Sugar beet ..	K.W.	11·2	May 2	Flat	22	10	Sugar Beet.
131	55	L.-M.	6	Oats	Dippe, Schreiber	18·0	May 27	Flat	21	9	Barley.
	56	L.-M.	11	Barley ..	Dippe, Schreiber	21·3	May 14	Flat	21	9	Barley.
	57	L.-M.	11	Wheat ..	Dippe, Schreiber	18·0	April 28	Flat	21	9	Barley.
132	58	L.-M.	4	?	?	14·0	June 7	Flat	?	?	?
133	59	L.-M.	4½	Sugar beet ..	K.W. "E." ..	14·9	May 5	Flat	22	9	Brussels.
135	60	M.-H.	2½	?	?	27·0	?	Flat	22	9–10	?
136	61	M.-H.	2½	Lucerne ..	Kuhn	14·0	May 21	Flat	18	10	Sugar beet.
	62	M.-H.	7	Wheat ..	Kuhn	15·0	May 20	Flat	18	10	Barley.
	63	M.-H.	9½	Rye grass and Barley.	Kuhn	13·7	May 17	Flat	18	10	Barley.
	64	M.-H.	4	Cabbage ..	Kuhn	13·8	May 21	Flat	18	10	Barley.
	65	M.-H.	14	Barley ..	Kuhn	15·0	May 18	Flat	18	10	Barley.
	66	M.-H.	9	Peas	Kuhn	15·0	May 20	Flat	18	10	Barley.
137	67	M.-H.	10	Clover	K.W. "E." ..	16·0	April 27	Flat	24	9	Sugar beet.
138	68	L.-M.	2½	Swedes ..	Schreiber ..	16·0	April 27	Flat	19½	9	Roots.
139	69	L.-M.	3	Potatoes and Brussels	Horning ..	15·0	April 22	Flat	19–21	9	Brussels and Potatoes.
141	70	M.-H.	4½	Oats	K.W.	13·6	June 3	Flat	19½	12	Barley.
	71	L.-M.	7	Barley ..	K.W.	12·1	April 21	Flat	19½	12	Barley.
142	72	M.-H.	6	Wheat ..	Schreiber ..	15·0	May 9	Flat	19	9	Sugar beet.
	73	M.-H.	5	Barley ..	Schreiber ..	15·0	April 21	Flat	19	9	Wheat.
	74	L.-M.	7	Tares	Schreiber ..	15·0	May 2	Flat	19	9	Peas.
143	75	F.	10	Sugar beet ..	Kuhn	10·0	?	Flat	19½	9–10	Wheat.
144	76	L.-M.	18	Barley ..	Mixed	12·0	April 29	Flat	18	?	Barley.
145	77	L.-M.	38	Barley ..	K.W. "E." ..	13·6	May 12	Flat	?	?	Barley.
146	78	L.-M.	13½	Linseed ..	Dippe	12·0	April 25	Flat	20	10	Barley.
149	82	F.	10	Potatoes ..	? ..	8·0	?	Ridge	24	8	Potatoes.
150	83	L.-M.	15	Barley ..	Dippe, Kuhn	11·3	May 7	Flat	19	8	Barley.
151	84	S.	32	Barley, Wheat and Oats.	K.W. "E." ..	12·0	?	Ridge	24	7	Wheat.
152	85	L.-M.	8	Swedes ..	K.W. "E." ..	17·7	May 12	Flat	19	11	?
	86	L.-M.	4	Potatoes ..	K.W. "E." ..	18·0	May 22	Flat	19	11	?

*V.L. = Very light. L.-M. = Light to medium. M.-H. = Medium to heavy. F. = Fen, Silt or Warp. S. = Sewage.
† "K.W." indicates *Klein Wanzleben*. "Mixed" indicates that more than two varieties were drilled.

Farm Number.	Field Number.	Soil* Class.	Acres.	Preceding Crop.	Variety of Seed.†	Seed lb. per acre.	Mean Date of Drilling.	Ridges or Flat.	Distance (ins.) between Drills.	Distance (ins.) between Plants	Succeeding Crop.
153	87	L.-M.	8	Oats	K.W. "E." ..	12·0	May 6	Ridge	22	9	Barley.
	88	M.-H.	3	Sugar beet ..	K.W. "E." ..	12·0	May 12	Ridge	22	9	Sugar beet.
	89	F.	3	Oats	K.W. "E." ..	12·0	April 26	Ridge	22	9	Oats.
154	90	L.-M.	4	Barley ..	K.W. "E." ..	10·0	May 7	Ridge	20	8	Barley.
155	91	L.-M.	5	Barley ..	Kuhn	12·0	May 9	Ridge	22	8	Wheat.
156	92	L.-M.	4	Wheat ..	Kuhn	15·0	May 26	Ridge	27	7	Barley.
157	93	M.-H.	20	Barley ..	Dippe	14·0	May 2	Flat	18	10	Barley.
158	94	M.-H.	30	Half Sugar beet, half Wheat.	K.W.	12·0	May 7	Ridge	24	12	Barley and Sugar beet.
160	95	F.	5½	Wheat ..	K.W. "Z.," Marsters.	13·6	May 13	Flat	20	9	Barley.
162	96	M.-H.	4	Barley ..	?	10·0	?	Flat	22	9	Oats.
163	97	L.-M.	8	Oats	Schreiber ..	15·0	May 12	Flat	?	?	Barley.
164	98	L.-M.	17	Wheat ..	Dippe	15·0	May 10	Flat	20	9	Barley.
166	99	F.	9	Oats and Wheat	Mixed	15·0	May 2	Flat	21	9	Potatoes and Wheat.
167	100	L.-M.	6	Barley ..	K.W. "E." ..	14·0	May 20	Flat	20	9	Peas.
	101	L.-M.	7	Wheat ..	K.W. "E." ..	12·0	April 29	Flat	20	9	Barley.
	102	L.-M.	7	Wheat ..	K.W. "E." ..	14·0	April 24	Flat	20	9	Barley.
168	104	F.	5½	Wheat ..	K.W. "E." and "Z."	9·0	May 1	Flat	18	9	Potatoes.
	105	F.	9½	Seed mustard	K.W. "E." and "Z."	9·0	May 4	Flat	18	9	Potatoes.
169	106	F.	11	Wheat ..	Mixed	15·0	May 13	Flat	19	8–9	Potatoes.
170	107	F.	18½	Sugar beet ..	Kuhn, Marsters	14·0	May 5	Flat	21	8	Potatoes.
	109	F.	11	Rye	Kuhn, Marsters	14·0	April 27	Flat	21	8	Wheat.
	110	F.	12	Carrots ..	Kuhn, Marsters	14·0	May 3	Flat	21	8	Sugar Beet.
	111	F.	10½	Sugar beet ..	Kuhn, Marsters	14·0	April 20	Flat	21	8	Rye.
	112	F.	12½	Sugar beet ..	Kuhn, Marsters	14·0	April 23	Flat	21	8	Sugar Beet.
	113	F.	10½	Sugar beet ..	Kuhn, Marsters	14·0	April 25	Flat	21	8	Wheat.
	114	F.	35½	Sugar beet, Potatoes.	Kuhn, Marsters	14·0	May 17	Flat	21	8	Potatoes and Sugar Beet.
	115	F.	17½	Sugar beet ..	Kuhn, Marsters	14·0	April 30	Flat	21	8	Potatoes.
171	116	F.	21	Wheat ..	Marsters ..	15·0	?	Flat	19–21	8	Wheat.
	117	F.	11½	Rye	K.W.	15·0	?	Flat	19–21	8	Wheat.
	118	F.	12	Rye	Kuhn	15·0	?	Flat	19–21	8	Wheat.
	119	F.	11	Mangolds, Oats	K.W.	15·0	?	Flat	19–21	8	Wheat.
	120	F.	7	Wheat ..	K.W.	15·0	?	Flat	19–21	8	Wheat.
172	121	F.	28	Wheat ..	Marsters ..	15·0	?	Flat	21	9	Wheat.
	122	F.	16	Wheat ..	K.W.	15·0	?	Flat	21	9	Wheat.
173	123	F.	23	Rye	K.W.	15·0	?	Flat	21	9	Wheat.
	124	F.	20	Wheat ..	K.W.	15·0	?	Flat	21	9	Wheat.
175	125	L.-M.	9½	Oats and Barley	Kuhn	18·5	?	Flat	19	10	Spring oats and Barley
177	126	M.-H.	6	Wheat ..	Strube B. ..	18·0	May 28	Flat	21	10	Wheat.
	127	M.-H.	3	Potatoes ..	Strube B. ..	16·0	May 17	Flat	21	10	Barley.
178	129	L.-M.	8	Oats	Schreiber ..	18·0	May 14	Flat	18	9	Barley.
	130	L.-M.	2	Clover	Schreiber ..	18·0	May 7	Flat	18	9	Oats.
179	131	M.-H.	1½	Sugar beet ..	Dippe	12·0	May 4	Flat	18–24	?	Barley.
180	132	V.L.	4	Sugar beet ..	Kuhn	15·0	April 28	Flat	18	?	Oats.
181	133	L.-M.	6	?	Kuhn	15·0	?	Flat	21	9	?
182	134	V.L.	12	Sugar beet ..	K.W.	15·0	May 31	Flat	20	9	Land given up.
	135	V.L.	19	Sugar beet ..	K.W.	15·0	April 25	Flat	20	9	
	136	V.L.	16	Sugar beet ..	K.W.	15·0	May 17	Flat	20	9	
	137	V.L.	26	Sugar beet ..	K.W.	15·0	May 5	Flat	20	9	
183	139	S.	10½	Sewage treatment.	Delitzscher ..	15·0	May 1	Flat	18	8–9	Sugar beet.
	140	S.	9	Wheat ..	Delitzscher ..	15·0	April 22	Flat	18	8–9	Oats.
	141	S.	8	Sugar beet ..	Delitzscher ..	15·0	May 12	Flat	18	8–9	Oats.
	142	S.	7	Barley ..	Delitzscher ..	15·0	May 18	Flat	18	8–9	Sugar beet.
184	143	L.-M.	24½	Wheat ..	K.W.	13·1	May 5	Flat	16 & 24	9	Barley.
185	144	L.-M.	37	Sugar beet, Sainfoin.	K.W.	10·0	April 19	Flat	21	9	Barley.
186	146	L.-M.	12	Oats	K.W.	11·7	May 5	Flat	20	9–10	Sugar beet.
187	147	V.L.	18	Oats	K.W.	13·6	May 20	Flat	20	9–10	Sugar beet.
188	148	M.-H.	4	?	?	14·0	May 16	Flat	20	9	?
189	149	F.	30	Oats and Wheat	Kuhn, Marsters	16·7	May 8	Flat	19	7	Potatoes.
190	150	M.-H.	2	Oats	Kuhn	11·5	April 29	Flat	21	8	Sugar beet.
191	151	V.L.	6½	Sugar beet ..	Kuhn	10·0	May 17	Flat	18	10	Barley.
192	152	L.-M.	6½	Oats	Kuhn	20·0	May 26	Flat	18–20	9	Barley.
	153	M.-H.	4½	Barley ..	Kuhn	20·0	May 10	Flat	18–20	9	Barley.
193	154	L.-M.	26	Barley ..	Kuhn	11·0	May 12	Flat	16	9	Barley.
	155	L.-M.	15	Sugar beet ..	Kuhn	11·0	June 5	Flat	16	9	Roots.
	156	L.-M.	10½	Barley ..	Kuhn	13·3	May 19	Flat	16	9	Barley.
	158	L.-M.	15	Oats	Kuhn	12·1	May 8	Flat	16	9	Sugar beet.
	159	L.-M.	11‡	Sugar beet ..	Kuhn	12·7	May 26	Flat	16	9	Oats.
	160	L.-M.	6	Barley ..	Kuhn	11·0	May 1	Flat	16	9	Barley.
	161	L.-M.	10	Oats	Kuhn	11·2	May 14	Flat	16	9	Barley.
194	162	L.-M.	23	Barley, Potatoes and Kale.	Marsters ..	13·5	April 21	Flat	16	8–10	Wheat.
195	163	M.-H.	23	Wheat ..	K.W.	15·2	May 12	Flat	19	10	Barley.
196	164	L.-M.	6	Oats	Kuhn	15·0	May 13	Flat	16	8	Barley.
	165	L.-M.	10	Oats	Kuhn, Hilleshog.	15·0	May 9	Flat	16	8	Barley.
	167	L.-M.	7	Linseed ..	Kuhn	14·0	April 24	Flat	16	8	Sugar beet.
	168	L.-M.	14	Wheat ..	Kuhn	15·7	May 1	Flat	16	8	Barley.
198	169	L.-M.	3	Wheat ..	K.W. "E." ..	14·0	May 4	Flat	19	8	Barley.

*V.L. = Very light. L.-M. = Light to medium. M.-H. = Medium to heavy. F. = Fen, Silt or Warp. S. = Sewage.
† "K.W." indicates *Klein Wanzleben*." "Mixed" indicates that more than two varieties were drilled.
‡ Of this 8½ acres failed and were ploughed up in June.

Farm Number.	Field Number.	Soil* Class.	Acres.	Preceding Crop.	Variety of Seed.†	Seed lb. per acre.	Mean Date of Drilling.	Ridges or Flat.	Distance (ins.) between		Succeeding Crop.
									Drills.	Plants	
	171	F.	4	Rye grass, Roots.	K.W.	14·0	April 21	Flat	19	8	Oats.
199	172	L.-M.	7	Fallow ..	K.W., Hilleshog	15·0	May 7	Flat	?	?	?
200	173	M.-H.	9½	Oats	K.W.	11·8	May 7	Flat	18	10–12	Barley.
201	174	M.-H.	14	Barley ..	K.W.	17·1	May 3	Flat	19	10	Barley.
202	175	L.-M.	12	Peas	K.W. "E." ..	12·0	May 3	Flat	21	8	Barley.
	176	L.-M.	9½	Barley ..	K.W. "E." ..	11·0	May 10	Flat	21	8	Barley.
204	178	V.L.	40	Oats	K.W. "E." ..	13·2	May 22	Flat	18	10	Barley.
	179	V.L.	28	Mustard ..	K.W. "E." ..	13·2	April 15	Flat	18	10	Spring oats.
	180	L.-M.	49	Wheat ..	K.W. "E." ..	13·2	May 9	Flat	18	10	Barley.
205	181	M.-H.	4	Oats ..	?	13·0	April 28	Flat	24	7	Barley.
	182	L.-M.	16	Barley ..	?	13·0	May 17	Flat	24	7	Barley.
206	184	F.	10	Potatoes ..	Mixed	15·0	May 3	Flat	18	9	Potatoes.
	185	F.	17½	Sugar beet ..	Mixed	15·0	May 8	Flat	18	9	Potatoes.
	186	F.	10	Sugar beet ..	Mixed	15·0	May 16	Flat	18	9	Wheat.
	187	F.	18½	Sugar beet ..	Mixed	15·0	May 22	Flat	18	9	Oats.
208	188	M.-H.	4	Tares	Kuhn	20·0	June 2	Ridge	?	?	Barley.
	189	M.-H.	10	Oats	Kuhn	9·6	May 23	Flat	?	?	Barley.
209	190	F.	19	Sugar beet ..	Kuhn, Marsters	14·0	April 14	Flat	20	8	Wheat.
	191	F.	8	?	Kuhn, Marsters	12·5	April 27	Flat	20	8	?
210	192	M.-H.	11	?	?	20·0	May 24	Flat	?	?	?
	193	M.-H.	3	?	?	20·0	May 9	Flat	?	?	?
	194	M.-H.	20	?	?	18·0	May 3	Flat	?	?	?
	195	M.-H.	29	?	?	20·0	May 11	Flat	?	?	?
211	196	L.-M.	9½	Wheat ..	K.W.	14·0	May 16	Flat	19–20	8–10	Barley.
212	197	L.-M.	4	Barley ..	Horning ..	18·0	April 19	Flat	18	9	Wheat.
	198	L.-M.	3	Barley ..	Wohanka ..	18·0	May 3	Flat	18	9	Wheat.
213	199	F.	9½	Oats	K.W.	20·0	April 28	Flat	18	8	Wheat.

*V.L. = Very light. L.-M. = Light to medium. M.-H. = Medium to heavy. F. = Fen, Silt or Warp. S. = Sewage.
† "K.W." indicates *Klein Wanzleben*. "Mixed" indicates that more than two varieties were drilled.

APPENDIX C.

MANURING DATA.

Total manures applied direct to 1927 Sugar Beet Crop.

Field Number.	Dung. Loads.	S. Ammonia Cwt.	Nit. Soda. Cwt.	Nit. Lime. Cwt.	Superph. Cwt.	S.B. Flour. Cwt.	Rock Pho. Cwt.	Basic Slag. Cwt.	Kainit. Cwt.	Muriate. Cwt.	Pot. Salts. Cwt.	Patents. Cwt.	Fish M. Cwt.	Meat Meal Cwt.	Guano. Cwt.	Soot. Cwt.	Salt. Cwt.	Sludge. Tons.	Shoddy. Cwt.	Lime. Cwt.
1	—	—	—	60	240	—	—	—	300	—	—	—	—	—	—	—	—	—	—	—
2	—	10	10	—	30	—	—	—	—	10	—	—	—	—	—	—	—	—	30	—
3	—	30	56	—	96	—	—	—	—	30	—	—	—	—	—	—	—	—	96	—
4	120	11	11½	—	23	—	—	—	—	11	—	—	—	—	—	—	—	—	—	—
5	190	18	34½	—	54	—	—	—	—	18	—	—	—	—	—	—	—	—	—	—
6	—	26	23	—	74	—	—	—	—	26	—	—	—	—	—	—	—	—	50	—
7	—	8	—	—	24	—	—	—	—	8	—	—	—	—	—	—	—	—	—	—
8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	—	—	—	—	—	—	—	—	—	—	—	160	—	—	—	—	—	—	—	—
12	—	6	—	6	—	—	18	—	—	12	—	—	—	—	—	—	—	—	—	—
13	60	—	—	—	60	—	—	—	40	—	—	—	—	—	—	—	—	—	—	—
14	2	—	24	—	—	—	—	—	—	—	—	—	865	—	—	—	—	—	—	—
15	157	—	13	—	—	—	—	—	70	—	—	—	—	—	—	—	—	—	—	—
16	—	—	23	—	—	—	—	—	115	—	—	—	812	—	—	—	—	—	—	—
17	210	—	—	—	—	—	—	—	—	—	—	160	—	—	—	—	—	—	—	—
18	336	—	15	—	—	—	—	—	—	—	—	240	—	—	—	—	—	—	—	—
21	150	5	—	—	20	—	—	—	25	—	—	40	10	—	—	—	—	—	—	—
22	—	—	8½	—	12	—	—	—	—	—	12	—	—	—	—	—	—	—	—	—
23	—	10	10½	—	—	20	—	—	—	—	22	—	—	—	—	—	—	—	—	—
24	40	8	10½	—	—	18	—	—	—	—	16	—	—	—	—	—	—	—	—	—
25	18	16	14½	—	—	26	—	—	—	—	34	—	—	—	—	—	—	—	—	—
26	480	80	—	—	—	—	—	—	—	—	—	200	—	—	—	—	—	—	—	—
27	—	80	—	—	—	—	—	—	—	—	—	200	—	—	—	—	—	—	—	—
28	—	—	—	15	—	—	—	—	—	—	—	80	300	—	—	—	—	—	—	—
29	—	10	15	—	20	—	—	—	30	—	—	—	—	—	—	—	—	—	—	—
30	—	30	52	—	60	—	—	—	90	—	—	—	—	—	—	—	—	—	—	—
31	270	27	40	—	27	—	—	—	81	—	—	—	—	—	—	—	—	—	—	120
32	94	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—	—	—	—	—
33	—	12	—	—	42½	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
34	65	4½	4½	—	—	—	—	—	—	—	—	8	—	—	—	—	—	—	—	—
35	60	2½	—	—	—	—	—	—	—	—	—	69½	—	—	—	—	—	—	—	140
36	120	—	10	—	—	—	—	—	—	—	—	80	—	—	—	—	—	—	—	—
37	24	6	—	—	6	1	—	—	—	4	—	—	—	—	—	—	—	—	—	—
38	—	—	—	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—	—
39	24	3	—	—	15	—	—	—	9	—	—	1	—	—	—	—	—	—	—	—
40	120	6	—	—	—	—	—	—	—	—	—	60	—	—	—	—	—	—	—	—
41	126	—	—	—	—	—	—	—	—	—	—	130	—	—	—	—	—	—	—	—
42	—	—	—	—	—	—	—	—	—	—	—	260	—	—	—	—	—	—	—	—
43	—	—	—	—	—	—	—	—	—	—	—	90	—	—	—	—	—	—	—	—
44	—	—	—	—	—	—	—	—	—	—	—	100	—	—	—	—	—	—	—	200
45	140	—	—	—	—	—	—	—	—	—	—	100	—	—	—	—	—	—	—	—
46	—	—	—	—	—	—	—	—	—	—	—	20	—	—	—	—	—	—	—	—
47	—	—	—	—	—	—	—	—	—	—	—	34	—	—	—	—	—	—	—	—
48	—	—	—	8	—	—	—	—	—	—	—	56	—	—	—	—	—	—	—	—
49	63	3	—	—	—	—	—	—	—	—	—	—	14	—	—	—	—	—	—	—
50	72	9	—	—	—	—	—	—	—	—	—	—	12	—	—	—	—	—	—	—
51	—	12	12	—	24	—	—	—	35	—	12	24	—	—	—	—	—	—	—	—
52	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
53	70	—	—	—	—	—	—	—	—	—	—	60	—	—	—	—	—	—	—	—
55	60	—	—	—	—	—	—	—	—	—	9	—	—	—	—	—	—	—	—	—
56	120	—	10	—	—	—	—	—	—	—	22	—	—	—	—	—	—	—	—	—
57	40	9¼	13½	—	—	—	—	—	—	4	22	—	—	—	—	—	—	—	—	—
58	56	6	—	—	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
59	—	5	5	—	—	—	5	—	22	—	—	—	—	—	—	—	—	—	—	—
60	25	—	—	—	—	—	—	—	—	—	—	12½	—	—	—	—	—	—	—	—
61	25	3	2½	—	5	—	—	—	—	—	3	3	—	—	—	—	—	—	—	—
62	—	8	11	—	12	—	—	—	—	—	8	8	16	—	—	—	—	—	—	—
63	50	10	10	—	25	—	—	—	30	—	—	15	—	—	—	—	—	—	—	—
64	—	6	12	—	24	—	—	—	—	—	6	—	—	—	—	—	—	—	—	—
65	—	17	14	—	34	—	—	—	28	—	10	—	28	—	—	—	—	—	—	—
66	—	12	16	—	16	—	—	—	—	—	8	10	16	—	—	—	—	—	—	—
67	48	6	—	—	17½	—	—	—	20	—	—	—	—	—	6	—	—	—	—	—
68	—	—	—	—	—	—	—	—	—	—	—	20	—	—	—	—	—	—	—	—
69	12	—	3	—	—	—	—	—	5	—	—	—	5	—	—	50	—	—	—	—
70	70	4½	4½	—	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
71	112	—	—	—	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—	—
72	73	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73	55	—	—	—	—	—	—	—	—	—	—	—	10	10	—	—	—	—	—	—
74	—	—	—	—	—	—	—	—	—	—	—	—	4	22	—	—	—	—	—	—
75	—	—	—	—	50	—	—	—	50	—	—	—	—	—	—	—	—	—	—	—
76	—	18	—	—	—	—	—	—	—	—	—	116	—	—	—	—	90	—	—	—
77	302	—	—	—	—	—	—	—	—	—	—	107	—	—	—	—	—	—	—	—
78	132	—	—	—	—	—	—	—	67½	—	—	—	67½	—	—	—	—	—	—	—
82	—	—	—	—	—	—	—	—	—	—	—	40	—	—	—	—	—	—	—	—
83	150	30	—	—	—	—	—	—	—	—	15	30	—	—	—	—	—	—	—	—
84	—	—	20	—	—	—	—	—	—	—	—	64	—	—	—	—	—	—	—	—
85	—	2	7½	—	12	1½	—	—	—	12	—	—	—	—	—	—	—	—	—	—
86	—	4	8	—	16	—	—	—	—	8	—	—	—	—	—	—	—	—	—	—
87	40	8	—	—	16	8	—	—	20	—	—	11	—	—	—	—	—	—	—	—
88	—	—	—	—	—	—	—	—	—	—	—	9	—	—	—	—	—	—	—	—
89	36	—	—	—	9	9	—	—	10	—	—	—	—	—	—	—	—	—	—	—

Total Manures applied direct to 1927 Sugar Beet Crop.

Field Number.	Dung. Loads.	S. Ammonia. Cwt.	Nit. Soda. Cwt.	Nit. Lime. Cwt.	Superph. Cwt.	S.B. Flour. Cwt.	Rock Pho. Cwt.	Basic Slag. Cwt.	Kainit. Cwt.	Muriate. Cwt.	Pot. Salts. Cwt.	Patents. Cwt.	Fish M. Cwt.	Meat Meal Cwt.	Guano. Cwt.	Soot. Cwt.	Salt. Cwt.	Sludge. Tons.	Shoddy. Cwt.	Lime. Cwt.
90	43	—	—	—	—	—	—	—	—	—	—	20	—	—	—	—	—	—	—	150
91	50	5	6	—	10	—	—	—	—	—	10	—	—	—	—	—	—	—	—	100
92	35	8	—	—	24	—	—	—	24	—	—	—	—	—	—	—	—	—	—	80
93	—	10	2	—	20	—	—	—	—	—	20	40	—	—	—	—	—	—	—	—
94	382	—	—	—	—	—	—	—	—	—	—	180	—	—	—	—	—	—	—	100
95	55	—	—	—	—	—	—	—	—	—	—	12	—	—	—	—	—	—	—	—
96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
97	64	4	—	8	—	—	4	—	16	—	—	—	40	—	—	—	—	—	—	—
98	—	—	34	—	68	—	—	—	—	34	—	—	—	—	—	—	—	—	—	—
99	—	—	—	—	—	—	—	—	—	—	—	36	—	—	—	—	—	—	—	—
100	—	—	—	12	—	30	—	—	—	—	—	—	—	—	—	—	—	—	—	—
101	—	—	—	14	—	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—
102	84	—	—	14	—	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—
104	—	16½	—	—	22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
105	—	—	—	—	38	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
106	—	—	—	—	—	—	—	—	—	—	—	25	—	—	—	—	—	—	—	—
107	—	—	—	—	—	—	—	—	74	—	—	74	—	—	—	—	—	—	—	—
109	—	—	—	—	—	—	—	—	44	—	—	44	—	—	—	—	—	—	—	—
110	—	—	—	—	—	—	—	—	48	—	—	48	—	—	—	—	—	—	—	—
111	—	—	—	—	—	—	—	—	42	—	—	42	—	—	—	—	—	—	—	—
112	—	—	—	—	—	—	—	—	50	—	—	50	—	—	—	—	—	—	—	—
113	—	—	—	—	—	—	—	—	42	—	—	42	—	—	—	—	—	—	—	—
114	—	—	—	—	—	—	—	—	262	—	—	142	—	—	—	—	—	—	—	—
115	—	—	—	—	—	—	—	—	70	—	—	70	—	—	—	—	—	—	—	—
116	294	—	—	—	—	—	42	—	105	—	—	—	—	—	—	—	—	—	—	—
117	—	—	—	—	—	—	23	—	57½	—	—	—	—	—	—	—	—	—	—	—
118	—	—	—	—	—	—	24	—	60	—	—	—	—	—	—	—	—	—	—	—
119	110	—	—	—	—	—	22	—	55	—	—	—	—	—	—	—	—	—	—	—
120	—	—	—	—	—	—	14	—	35	—	—	—	—	—	—	—	—	—	—	—
121	135	—	—	—	56	—	—	—	140	—	—	—	—	—	—	—	—	—	—	560
122	—	—	—	—	32	—	—	—	80	—	—	—	—	—	—	—	—	—	—	—
123	162	—	—	—	36	—	—	—	90	—	—	—	—	—	—	—	—	—	—	—
124	—	—	—	—	38	—	—	—	95	—	—	—	—	—	—	—	—	—	—	—
125	89	—	16	—	—	—	—	—	—	—	—	60	—	—	—	—	—	54	—	—
126	—	—	—	—	—	—	—	—	—	—	—	48	—	—	—	—	—	—	—	—
127	—	—	—	—	—	—	—	—	—	—	—	28	—	—	—	—	—	—	—	—
129	48	18	—	—	18	—	—	—	48	—	—	—	160	—	—	—	—	—	—	—
130	25	4	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
131	—	1½	3	—	6	—	—	—	—	1½	—	—	—	—	—	—	—	—	—	—
132	40	—	10½	—	9	—	—	—	22½	—	—	—	—	—	—	—	—	—	—	—
133	—	—	—	—	—	—	—	—	—	—	—	40	—	—	—	—	—	—	—	—
134	—	—	—	—	—	—	—	—	48	—	—	—	—	—	—	—	—	—	—	—
135	—	—	—	—	—	—	—	—	76	—	—	—	—	—	—	—	—	—	—	—
136	15	—	—	—	—	—	—	—	64	—	—	—	—	—	—	—	—	—	—	—
137	10	—	—	20	—	—	—	—	104	—	—	—	200	—	—	—	—	20	—	—
139	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
140	90	—	—	—	—	—	—	—	—	—	—	50	—	—	—	—	—	—	—	—
141	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
142	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	*	—	—
143	254	24½	—	—	73½	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
144	—	—	—	—	—	—	—	—	200	—	—	—	—	—	—	—	—	—	—	—
146	—	—	—	7	—	—	—	—	120	—	—	60	—	—	—	—	—	—	—	—
147	—	—	10	9	—	—	—	—	200	—	—	30	60	—	—	—	—	—	—	—
148	24	—	—	—	—	—	—	—	—	—	—	20	—	—	—	—	—	—	—	—
149	300	—	—	—	—	—	—	—	—	—	—	—	—	—	300	—	—	—	—	—
150	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
151	—	—	6½	—	—	—	—	—	—	—	—	32	—	—	—	—	—	—	—	—
152	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
153	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
154	—	—	40	—	—	—	—	—	—	—	—	260	—	—	—	—	—	—	—	—
155	100	—	15½	—	40	—	—	—	98	—	—	—	—	—	—	—	—	—	—	—
156	165	—	10	—	—	—	—	—	—	—	—	—	110	—	—	—	—	—	—	—
158	—	—	—	—	—	—	—	—	—	—	—	—	147	—	—	—	—	—	—	—
159	65	—	9½	—	30	—	—	—	88	—	—	—	—	—	—	—	—	—	—	—
160	84	—	2	—	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—	—
161	—	—	15	—	—	—	—	—	70	—	—	—	40	—	—	—	—	—	—	—
162	276	—	21	—	—	—	—	—	92	—	—	161	—	—	—	—	—	—	—	—
163	—	—	13	—	—	—	—	—	120	—	—	120	—	—	—	—	—	—	—	—
164	—	30	—	—	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
165	—	32	—	30	—	—	—	—	33	—	—	2	—	—	—	—	—	—	—	—
167	—	26	—	16	—	—	—	—	22	—	—	—	—	—	—	—	—	—	—	—
168	240	42½	—	29	—	—	—	—	47	—	—	—	—	—	—	—	—	—	—	—
169	41	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
171	27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
172	30	10½	10	—	—	—	—	—	45	—	—	—	—	—	—	—	—	—	—	—
175	—	—	9½	—	—	—	—	—	—	—	—	59	—	—	—	—	—	—	—	—
174	—	30	14	—	50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
175	—	—	13	12	—	—	—	—	50	—	—	35	—	—	—	—	—	—	—	—
176	—	—	11	10	—	—	—	—	40	—	—	27	—	—	—	—	—	—	—	—
178	—	—	—	—	75	—	—	—	205	—	—	—	—	—	—	—	—	—	—	—
179	—	—	—	—	50	—	—	—	145	—	—	—	—	—	—	—	—	—	—	—
180	—	—	—	—	90	—	—	—	250	—	—	—	—	—	—	—	—	—	—	—
181	32	—	—	—	—	—	—	8	8	—	—	4	12	—	—	—	—	17½	—	—

* Treated with Sewage.

MANURING DATA—*continued.*

Total Manures applied direct to 1927 Sugar Beet Crop.

Field Number.	Dung. Loads.	S. Ammonia. Cwt.	Nit. Soda. Cwt.	Nit. Lime. Cwt.	Superph. Cwt.	S.B. Flour. Cwt.	Rock Pho. Cwt.	Basic Slag. Cwt.	Kainit. Cwt.	Muriate. Cwt.	Pot. Salts. Cwt.	Patents. Cwt.	Fish M. Cwt.	Meat Meal Cwt.	Guano. Cwt.	Soot. Cwt.	Salt. Cwt.	Sludge. Tons.	Shoddy. Cwt.	Lime. Cwt.
182	128	9	—	—	—	—	—	32	32	—	—	35½	19½	—	—	—	—	—	—	—
184	—	30	2½	—	70	—	—	—	—	20	—	—	—	—	—	—	—	—	—	—
185	—	—	4½	—	122½	—	—	—	—	35	—	—	—	—	—	—	—	—	—	—
186	—	—	2½	—	70	—	—	—	—	20	—	—	—	—	—	—	—	—	—	—
187	—	—	4½	—	129½	—	—	—	—	37	—	—	—	—	—	—	—	—	—	—
188	48	—	8	—	—	—	—	—	20	—	—	—	—	—	—	—	—	—	—	—
189	120	—	14½	—	—	—	—	—	60	—	—	—	—	—	—	—	—	—	—	—
190	—	—	—	—	45	—	—	—	—	—	—	45	—	—	—	—	—	—	—	—
191	—	—	—	—	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
192	—	16½	—	—	—	—	—	55	—	—	—	105	—	—	—	—	—	—	—	—
193	—	4½	—	—	—	—	—	—	—	—	—	25	—	—	—	—	—	—	—	—
194	—	30	—	—	—	—	—	50	—	—	—	190	—	—	—	—	—	—	—	—
195	—	44	—	—	—	—	—	130	—	—	—	290	—	—	—	—	—	—	—	—
196	140	—	19	—	19	—	—	—	28½	—	—	—	—	—	—	—	—	—	—	—
197	40	—	—	—	—	—	—	—	—	—	—	8	—	—	—	—	—	—	—	—
198	24	—	—	—	—	—	—	—	—	—	—	6	—	—	—	—	—	—	—	—
199	—	19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

APPENDIX D.

YIELD DATA.

Field Number	Yield in Tons per Acre. Unwashed.	Washed.	% Tare.	Effective % * Sugar Content.	lb. Sugar (Sucrose) per Acre.	lb. Sugar (Sucrose) per £ labour.	† Haulage. Miles.	‡ Method of Transport.	Tops per Acre. Estimated Tons.	Method of Disposal.	Value. £ s. d.
1	7·015	6·085	13·26	16·4	2236	203	1½	Rail	9	Folded	3 7 6
2						344			11	Folded	4 2 6
3						373			10	Ploughed in	2 15 0
4						383			9	Ploughed in	2 9 6
5	9·932	7·667	22·81	16·8	2885	345	½	Road	11	Ploughed in	3 0 6
6						296			12	Ploughed in	3 6 0
7						538			8½	Ploughed in	2 6 9
8	8·066	7·023	12·93	17·0	2674	274			9	Ploughed in	2 9 6
9	8·303	7·036	15·99	14·6	2301	255	½	Road	9	Ploughed in	2 9 6
10	10·501	8·684	17·30	17·6	3424	407			9	Ploughed in	2 9 6
12	9·637	7·844	18·60	16·5	2899	277	½	Rail	9	Carted off	3 7 6
13	11·039	9·077	17·77	16·6	3375	347	2	Rail	12	Ploughed in	3 6 0
14	5·619	4·936	12·15	17·2	1902	189			4	Ploughed in	1 2 0
15	9·901	8·398	15·21	16·4	3085	332	½	Road & Rail	8	Ploughed in	2 4 0
16	5·550	4·445	19·91	15·6	1553	141			4	Ploughed in	1 2 0
17	8·230	7·258	11·81	17·9	2910	275	½	Road	8	Part carted and part ploughed in..	2 12 0
18	11·227	9·822	12·52	17·5	3850	393			11	Part carted and part ploughed in..	3 12 6
21	Crop fail	ed and w	as plou	ghed u	p.	—	—	—	—	—	—
22						282			10	Ploughed in	2 15 0
23	13·310	11·596	12·90	17·1	4442	298	1	Rail	10	Carted off	3 15 0
24						289			10	Ploughed in	2 15 0
25						274			10	Ploughed in	2 15 0
26	14·524	10·557	27·31	15·8	3659	404	1½	Rail	8	Part carted and part folded ..	2 12 0
27	12·529	10·414	16·88	17·2	4012	428			7	Part carted and part ploughed in..	2 6 6
28	10·798	8·617	20·19	16·5	3185	316	1½	Rail	6	Folded	2 5 0
29	8·790	7·649	11·85	17·1	2930	355	2	Rail	11	Ploughed in	3 0 6
30	10·995	9·346	14·99	17·0	3559	371	1½	Rail	12	Folded	4 10 0
31	6·829	6·294	7·88	17·4	2453	252	5	Rail	9	Folded	3 7 6
32	4·193	3·297	21·35	14·7	1086	101	½	Road	4	Folded	1 10 0
33	7·026	5·692	18·98	14·2	1810	173	½	Rail & Road	9	Part carted and part ploughed in..	2 19 6
34	11·675	10·590	9·29	15·1	3582	287	½	Rail	14	Ploughed in	3 17 0
35	8·925	8·206	8·05	16·7	3070	259			10	Part folded and part ploughed in..	3 5 0
36	11·057	8·578	22·41	16·7	3209	276	½	Road	12	Ploughed in	3 6 0
37	10·500	8·903	14·35	16·6	3344	327	1	Rail	12	Part folded and part ploughed in..	3 18 0
38	10·168	8·496	16·44	16·1	3064	217	5	Rail	12	Ploughed in	3 6 0
39	5·296	4·845	8·53	17·0	1845	181			6	Ploughed in	1 13 0
40	7·506	6·065	19·19	16·6	2255	183	2½	Rail	8	Folded	3 0 0
41	5·635	4·677	17·00	16·9	1781	175	2	Rail & Road	5	Part folded and part ploughed in..	1 13 6
42	10·658	9·091	14·69	14·4	2932	338	½	Light railway.	12	Folded	3 18 0
43	8·134	6·698	17·65	15·4	2311	246	½	Road	12	Folded	3 18 0
44	9·953	8·900	10·58	15·7	3130	284	2½	Rail	12	Folded	3 18 0
45	7·889	6·879	12·77	16·4	2527	254	1½	Rail & Road	10	Folded	3 15 0
46						276			7	Ploughed in	1 18 6
47	8·095	6·722	16·96	16·6	2500	241	4½	Rail	7	Ploughed in	1 18 6
48						296			7	Ploughed in	1 18 6
49	8·170	6·854	16·10	15·8	2426	307	2	Rail	8	Ploughed in	2 4 0
50	8·943	7·559	15·47	17·1	2895	242			9	Ploughed in	2 9 6
51	7·693	3·983	48·23	14·4	1285	61	3	Rail	6	Ploughed in	1 13 0
52	5·321	3·757	29·39	15·7	1321	78	½	Road	4	Part carted and part ploughed in..	1 6 0
53	8·914	7·081	20·56	16·3	2585	183	½	Road	10	Ploughed in	2 15 0
55						231			9	Part carted and part ploughed in..	2 19 6
56	9·408	7·770	17·41	16·4	2854	221	½	Rail	9	Part carted and part ploughed in..	2 19 6
57						233			9	Part carted and part ploughed in..	2 19 6
58	?	?	?	?	?	?	?		?	?	?
59	8·000	7·128	10·90	16·3	2662	245	1	Rail	8	Part carted and part ploughed in..	2 12 0
60	Crop fail	ed and w	as plou	ghed u	p.	—	—	—	—	—	—
61	14·214	12·223	14·00	16·4	4490	327			9	Ploughed in	2 9 6
62	10·847	9·203	15·16	16·8	3463	205			8	Ploughed in	2 4 0
63	10·434	9·534	8·62	17·3	3695	278		Rail	8	Ploughed in	2 4 0
64	8·994	7·408	17·63	16·1	2672	213	5		8	Ploughed in	2 4 0
65	8·530	7·781	8·78	17·9	3120	247			7	Part ploughed in and part folded	2 6 6
66	10·123	8·520	15·83	16·3	3111	188			9	Folded	3 7 6
67	11·245	7·548	32·86	16·2	2739	168	3½	Rail	10	Ploughed in	2 15 0
68	7·336	6·895	5·96	16·6	2564	220	3	Rail	10	Part carted, part folded, and part ploughed in.	3 5 0
69	13·125	12·118	7·89	17·8	4832	358	2½	Rail	12	Carted off	4 10 0
70	8·726	6·469	25·87	15·7	2275	162	6	Rail	8	Part folded and part carted ..	3 0 0
71	12·407	10·519	15·10	15·9	3746	242			12	Part folded and part carted ..	4 10 0
72						222			9	Carted off	3 7 6
73	10·956	8·793	19·74	17·2	3388	326	¾	Rail	9	Ploughed in	2 9 6
74						251			9	Part carted and part ploughed in ..	2 19 6
75	10·664	8·484	20·44	12·2	2319	198	1½	Water	12	Ploughed in	2 14 0
76	10·196	8·717	14·51	17·2	3358	254	½	Rail	9	Folded	3 7 6
77	10·105	8·453	16·34	17·0	3219	251	½	Road	9	Ploughed in	2 9 6
78	7·330	6·854	6·49	15·8	2426	257	½	Road	10	Folded	3 15 0
82	9·520	8·100	14·92	14·5	2631	248	2	Rail	6	Ploughed in	1 7 0

* Weighted average of individual consignments. † From field to roadside, wharf or rail station.
‡ From roadside, wharf or rail station to factory: where more than one destination *data* are given in same order as factories in Appendix A.

Field Number	Yield in Tons per Acre. Unwashed.	Washed.	% Tare.	Effective % * Sugar Content.	lb. Sugar (Sucrose) per Acre.	lb. Sugar (Sucrose) per £ labour.	† Haulage. Miles.	‡ Method of Transport.	Tops per Acre. Estimated Tons.	Method of Disposal.	Value. £ s. d.
83	10·135	8·341	17·71	15·6	2917	235	½	Road	6	Folded	2 5 0
							2	Rail			
84	9·818	8·433	14·10	16·1	3041	340	½	Road	12	Ploughed in	3 6 0
							½	Rail			
85	9·954	8·768	11·92	17·0	3339	279	1	Rail	14	Carted off	5 5 0
							½	Road			
86	10·747	8·889	17·29	16·0	3186	272			14	Carted off	5 5 0
87	8·830	7·401	16·17	16·2	3686	238			8	Ploughed in	2 4 0
88	5·691	4·545	20·15	17·1	1741	177	½	Rail	10	Ploughed in	2 15 0
							½	Road	—		
89	4·342	3·960	8·78	14·7	1304	175	½	Rail	10	Ploughed in	2 5 0
90	12·097	11·016	8·93	16·7	4121	374	½	Road	10	Part carted and part ploughed in	3 5 0
91	8·800	7·994	9·15	17·0	3044	245	1½	Rail	12	Folded	4 10 0
92	7·816	7·270	6·98	15·9	2589	253	1	Rail	8	Ploughed in	2 4 0
93	8·929	7·613	14·75	16·7	2848	289	1½	Rail	10	Part carted and part ploughed in	3 5 0
94	7·593	6·401	15·71	16·7	2394	246	½	Road	9	Part carted and part ploughed in	2 19 6
95	12·249	9·629	21·38	15·5	3343	306	½	Road	10	Folded	3 5 0
96	7·012	4·776	31·89	15·5	1658	171	1½	Rail	9	Ploughed in	2 9 6
97	7·853	7·082	9·82	16·6	2633	232	3½	Rail	8	Ploughed in	2 4 0
98	7·236	6·351	12·24	17·6	2504	239	½	Road	7½	Ploughed in	2 1 3
99	8·247	6·935	15·91	15·3	2377	331	½	Road	9	Ploughed in	2 0 6
100	5·874	4·399	23·89	17·6	1734	184			5	Ploughed in	1 7 6
101	12·174	9·117	26·45	16·5	3370	278	½	Road	8	Ploughed in	2 4 0
102	11·363	8·509	25·12	17·2	3278	328			8	Folded	3 0 0
104	13·434	11·424	14·97	14·0	3583	280	5	Rail	11	Ploughed in	2 9 6
105	12·931	9·213	28·75	14·9	3075	249			11	Ploughed in	2 9 6
106	8·761	6·435	26·55	14·5	2090	191	4	Rail	9	Ploughed in	2 0 6
107						276			10	Ploughed in	2 5 0
109						249			10	Ploughed in	2 5 0
110						263			10	Ploughed in	2 5 0
111						255			10	Ploughed in	2 5 0
112	9·974	8·521	14·58	13·5	2577	257	½	Water	10	Ploughed in	2 5 0
113						270			10	Ploughed in	2 5 0
114						263			10	Ploughed in	2 5 0
115						256			10	Ploughed in	2 5 0
116						343			11	Folded	3 11 6
117						336			11	Carted off	3 11 6
118	11·134	9·596	13·82	16·1	3461	338	1½	Rail	11	Ploughed in	2 9 6
119						358			11	Ploughed in	2 9 6
120						329			11	Carted off	3 11 6
121	11·134	9·596	13·82	16·1	3461	322	½	Road	11	Ploughed in	2 9 6
122						291			11	Ploughed in	2 9 6
123	11·134	9·596	13·82	16·1	3461	336	½	Road	11	Ploughed in	2 9 6
124						273			11	Ploughed in	2 9 6
125	10·842	9·926	8·45	17·0	3780	183	1	Rail	12	Part folded and part ploughed in	3 18 0
126	5·001	2·901	41·98	15·3	994	71	1½	Rail	4	Ploughed in	1 2 0
127	10·021	6·406	36·07	16·7	2396	162			8	Carted off	3 0 0
129	13·063	10·681	18·24	16·0	3828	386	½	Rail	12	Ploughed in	3 6 0
130	8·319	7·573	8·96	15·0	2545	211			10	Ploughed in	2 15 0
131	9·642	8·531	11·52	17·4	3325	179	2	Rail	11	Ploughed in	3 0 6
132	7·962	7·312	8·16	17·5	2866	270	½	Road	9	Ploughed in	2 9 6
133	Crop fail	ed and w	as plou	ghed u	p.	—	—	—	—	—	—
134	3·095	2·353	23·97	15·7	828	118			3	Ploughed in	16 6
135	4·663	4·267	8·49	17·0	1625	210	½	Road	3	Ploughed in	16 6
136	4·709	3·774	19·87	16·1	1361	167			3	Ploughed in	16 6
137	3·885	3·426	11·82	16·7	1282	162			3	Ploughed in	16 6
139	8·521	7·684	9·82	12·1	2083	189			9	Carted off	3 7 6
140	9·976	7·452	25·30	15·1	2521	225	½	Water	6	Ploughed in	1 13 0
141	13·244	11·033	16·69	13·8	3411	363			9	Part carted and part ploughed in	2 19 6
142	12·716	10·192	19·85	13·6	3105	292			9	Carted off	3 7 6
143	10·845	8·763	19·20	16·6	3258	347	½	Road	12	Ploughed in	3 6 0
144	8·610	7·516	12·70	17·2	2896	395	½	Road	9	Folded	3 7 6
146	3·174	2·572	18·96	16·2	933	113	1	Road	3	Part carted and part ploughed in	1 0 6
147	5·761	4·955	14·00	17·3	1920	162	½	Road	5	Folded	1 17 6
148	Crop fail	ed and w	as plou	ghed u	p.	—	—	—	—	—	—
149	18·133	12·920	28·75	17·0	4920	274	½	Road	12	Ploughed in	3 6 0
150	10·880	6·039	44·49	16·9	2286	234	½	Road	8	Part carted and part ploughed in	2 12 0
151	4·335	3·803	12·27	16·8	1431	264	½	Road	4	Ploughed in	1 2 0
152											
153	8·333	6·202	25·57	16·4	2278	203	½	Road	9	Ploughed in	2 9 6
						220			9	Part carted and part ploughed in	2 19 6
154	6·912	5·885	14·92	16·9	2228	227			7	Ploughed in	1 18 6
155	3·887	3·019	22·61	15·6	1055	128			7	Ploughed in	1 18 6
156	7·996	6·887	13·83	16·3	2515	208			7	Ploughed in	1 18 6
158	5·427	4·974	8·33	17·2	1916	198	½	Road	7	Ploughed in	1 18 6
159	7·895	5·824	26·34	16·0	2087	179			7	Ploughed in	1 18 6
160	9·069	8·186	9·73	17·1	3136	234			7	Ploughed in	1 18 6
161	5·156	4·385	14·95	15·5	1522	141			7	Ploughed in	1 18 6
162	11·948	10·643	10·93	16·8	4005	355	½	Road	8	Ploughed in	2 4 0
163	11·709	9·271	18·92	16·8	3489	249	½	Road	8	Ploughed in	2 4 0
164	9·958	7·465	25·03	16·0	2675	283			9	Folded	3 7 6
165	14·245	10·623	25·43	16·1	3831	298			9	Folded	3 7 6
167	10·314	8·434	18·22	15·8	2985	274	½	Rail	9	Folded	3 7 6
168	13·676	10·657	22·07	16·1	3843	347			9	Part folded and part ploughed in	2 19 6
169	10·092	6·576	34·79	15·4	2268	189	1	Rail	7	Ploughed in	1 18 6
171	9·128	7·431	18·60	15·7	2613	189			8	Folded	2 12 0

* Weighted average of individual consignments. † From field to roadside, wharf or rail station.
‡ From roadside, wharf or rail station to factory: where more than one destination *data* are given in same order as factories in Appendix A.

Field Number	Yield in Tons per Acre. Unwashed.	Washed.	% Tare.	Effective % * Sugar Content.	lb. Sugar (Sucrose) per Acre.	lb. Sugar (Sucrose) per £ labour.	† Haulage. Miles.	‡ Method of Transport.	Tops per Acre. Estimated Tons.	Method of Disposal.	Value. £ s. d.
172	13·789	9·327	27·10	16·1	3364	322	1/16	Road	10	Carted off	3 15 0
173	13·189	9·416	22·75	16·9	3565	291	¼	Road	9	Part folded and part ploughed in	2 19 6
174	15·654	9·993	36·16	16·2	3626	353	⅛	Road	10	Ploughed in	2 15 0
175	9·009	8·043	10·73	17·1	3081	414	1	Rail	7	Folded	2 12 6
176	7·979	7·045	11·70	17·3	2730	342			6	Folded	2 5 0
178						209			4½	Ploughed in	1 4 9
179	5·588	4·575	18·13	15·8	1619	215	1	Rail	4½	Part folded and part ploughed in	1 9 9
180						218			4½	Ploughed in	1 4 9
181	6·525	5·793	11·22	17·2	2232	216	2	Rail	9	Ploughed in	2 9 6
182	8·977	7·589	15·45	16·0	2720	195	½	Road	9	Ploughed in	2 9 6
184						225			13	Ploughed in	2 18 6
185	9·160	7·303	20·27	13·9	2274	219	½	Rail	13	Ploughed in	2 18 6
186						205			13	Ploughed in	2 18 6
187						209			13	Ploughed in	2 18 6
188	5·803	4·944	14·81	15·8	1750	182	½	Road	8	Ploughed in	2 4 0
189	9·720	7·713	20·88	17·4	3006	242			8	Ploughed in	2 4 0
190	12·261	10·933	10·84	14·0	3429	372	½	Water	12	Ploughed in	2 14 0
191	?	?	?	?	?	?	?	?	?	?	?
192						?			?	?	?
193	?	?	?	?	?	?	?	?	?	?	?
194						?			?	?	?
195						?			?	?	?
196	10·791	9·362	13·25	16·6	3481	328	3½	Rail	6½	Part folded and part ploughed in	2 2 9
197	6·346	5·536	12·76	16·3	2021	166	2	Rail	8	Folded	3 0 0
198						173			8	Carted off	3 0 0
199	9·991	8·398	15·94	16·7	3142	234	1½	Rail	14	Ploughed in	3 17 0

* Weighted average of individual consignments. † From field to roadside, wharf or rail station.
‡ From roadside, wharf or rail station to factory: where more than one destination *data* are given in same order as factories in Appendix A.

APPENDIX E.

FIELD COSTS AND RETURNS PER ACRE.

Field Number	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	1 12 9½	1 6 9	17 6	1 11 5½	1 4 3	17 2	11 9	1 10 10	1 10 8½	13 5½	15 2½	9 10	1 0 10½	12 7½	15 5
Sub-soiling	—	15 2½	9 1	—	—	1 2 5½	—	—	—	—	8 2½	—	2 1½	12 7½	—
Cultivating	7 5	15 3½	7 0½	2 9½	12 8	5 4½	—	15 1½	5 10	3 1½	14 3	13 8	3 5½	2 9½	10 10
Steam tackle	1 1 8½	—	—	—	—	—	—	1 3 10	1 1 8	1 2 10½	—	—	—	—	1 3 6½
Harrowing	3 3	8½	7 4½	10 1½	13 4½	10 5	4 9	19 1½	11 1	7 0½	1 9½	3 6½	4 5	6 6½	14 0½
Rolling	3 6	4 7½	1 1 9½	2 4	1 11½	3 0	2 0½	3 10	3 7½	2 1½	6 6½	2 5½	4 2½	5 4½	6 4½
Other work	3 1½	—	—	—	2 1½	—	—	3 3½	2 11½	3 11	1 6	—	1 5½	—	2 9½
Preliminary cultivations	3 16 9½	3 2 7½	2 2 9½	2 6 8	2 14 4½	2 18 5	18 6½	5 1 1½	3 15 5½	2 12 6½	2 7 6½	1 9 6	1 16 6½	1 19 10½	3 16 0½
Seed	3 3	9 4	7 6½	10 7½	11 1½	3 11½	9 5½	5 10	6 2	3 9	7 0	11 3	11 3	11 3	11 3
Drilling	1 10½	1 9	1 9½	1 6	2 7½	2 1	2 2½	1 8½	1 7½	1 9	1 10½	1 3	2 7½	2 6	2 7½
Bunching, singling and hand hoeing	2 4 3	2 0 0	2 4 5½	2 6 8½	2 9 1½	3 2 9	1 6 3	1 0 0	1 3 7	1 10 0	1 13 4	2 4 1	3 12 9½	1 16 5	2 4 2½
Horse hoeing	3 7	4 4½	7 2½	3 5½	7 2	6 7	1 6½	10 7½	19 2	11 6½	12 5½	16 10½	11 4½	16 2½	19 7½
Other work	—	—	—	—	10½	—	8½	—	—	4½	1 9	—	—	1 4	—
Seed, drilling and after cultivations	3 2 11½	2 15 5½	3 1 0	3 7 3½	3 10 11	4 1 2½	2 0 2	1 18 2½	2 14 11½	2 9 10	2 18 2½	3 9 7½	4 18 5½	3 8 1½	3 18 1½
Applying manures	5 4½	2 1	3 10½	16 3	19 5½	2 2½	1 1	—	—	1 0	3 9½	6 3½	10 11½	1 14 9½	16 8½
Artificials*	2 3 10	3 3 6½	4 0 8½	2 8 10	3 5 2½	2 18 0	1 13 6½	—	—	2 0 10	3 7 9	1 7 7½	4 13 4	1 6 10½	5 14 4½
Dung*	—	—	—	4 1 9½	4 3 10	—	—	—	—	—	—	1 17 6	7	4 4 1½	—
Total manures	2 9 2½	3 5 7½	4 4 6½	7 6 10½	8 8 6	3 0 2½	1 14 7½	—	—	2 1 10	3 11 6½	3 11 5½	5 4 10½	7 5 9½	6 11 0½
Lifting	11 7½	7 4	8 5	14 0	9 6	14 4½	9 7½	8 0½	8 0½	8 1½	10 7½	5 0	6 11½	10 7½	7 5
Pull, top and lumping	2 0 0	1 16 0	1 13 9½	1 17 0	1 15 0	1 14 0½	1 15 0	1 15 4	1 13 4	1 15 0	2 3 8	2 0 0	2 6 2½	2 8 4	2 11 0½
Loading and haulage†	1 17 1½	14 7½	16 1½	9 2½	8 7½	15 10½	13 4½	18 7½	14 4½	1 9 1	2 16 1½	2 17 6	1 3 11	1 10 6½	19 1½
Total harvesting	4 8 9½	2 17 11½	2 18 4	3 0 2½	2 13 1½	3 4 8½	2 18 0	3 1 8½	2 15 9½	3 12 2½	5 10 5½	5 2 6	8 17 1½	4 9 5½	8 17 7
Rent	1 0 0	1 1 8½	1 1 8½	1 1 8½	1 1 8½	1 1 8½	1 1 8½	17 2½	17 2½	17 2½	1 5 0	1 2 6	10 1½	10 1½	10 1½
Rates	3 9	4 0½	4 0½	4 0½	4 0½	4 0½	4 0½	6 2½	6 2½	6 2½	4 1	4 6	2 8	2 8	2 8
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	2 3 9	2 5 9	2 5 9	2 5 9	2 5 9	2 5 9	2 5 9	2 3 4½	2 3 4½	2 3 4½	2 9 1	2 7 0	1 12 9½	1 12 9½	1 12 9½
Farm cash cost	16 1 5½	14 7 4½	14 12 5½	18 6 9½	19 12 8½	15 9 10½	9 17 1½	12 4 4½	11 9 6½	12 19 10	16 16 9½	16 0 1	17 9 9	18 15 11½	19 15 6½
Transport and Grower's Representative	1 4 10½	1 10 4½	1 10 4½	1 10 4½	1 10 4½	1 10 4½	1 10 4½	1 5 1½	1 5 5½	1 9 9½	2 14 8½	2 13 6½	1 2 10½	2 2 6½	1 3 4
Total cash cost	17 6 3½	15 17 9½	16 2 10½	19 17 2½	21 3 1	17 0 3	11 7 6	13 9 6½	12 15 0	14 9 7½	19 11 6	18 13 7½	18 12 7½	20 18 6	20 18 10½
Gross cash receipts	17 1 11	22 1 0½	22 1 0½	22 1 0½	22 1 0½	22 1 0½	22 1 0½	20 5 6	18 4 8½	25 15 7	22 2 7½	25 15 0½	14 10 9	23 13 1½	13 1 0
Cash {Profit	—	6 3 3	5 18 2½	2 3 10½	17 11½	5 0 9½	10 13 6½	6 15 11½	5 9 8½	11 5 11½	2 11 1½	7 1 4½	—	2 14 7½	—
Cash {Loss	4 4½	—	—	—	—	—	—	—	—	—	—	—	4 1 10½	—	8 17 10½
Residual values bt. fwd.	15 0	1 4 0	10 0	5 0	10 0	1 4 0	2 0 0	1 4 0	1 4 0	10 0	5 0	5 0	2 10 0	2 10 0	5 0
Gross cost	18 1 3½	17 1 9½	16 12 10½	20 2 2½	21 13 1	18 4 3	13 7 6	14 13 6½	13 19 0	14 19 7½	19 16 6	18 18 7½	21 2 7½	23 8 6	21 3 10½
Resid. Cult. values cd. fwd.	1 1 3½	17 5½	16 1	6 4	9 4½	1 1 11	1 2½	1 3 10½	1 7 2½	1 0 1½	18 4	16 8	16 2½	1 0 6½	1 9 11½
„ Man. „ „	19 3½	1 0 0½	19 8	2 11 4½	2 14 11½	17 6½	12 3½	—	—	10 2½	1 1 7½	1 15 6	1 6 7½	2 8 3½	1 14 11
Tops†	3 7 6	4 2 6	2 15 0	2 9 6	3 0 6	3 6 0	2 6 9	2 9 6	2 9 6	2 9 6	3 7 6	3 6 0	1 2 0	2 4 0	1 2 0
Total credits	5 8 1	5 19 11½	4 10 9	5 7 2½	6 4 10½	5 5 5½	3 0 3	3 13 4½	3 16 8½	3 19 9½	5 7 5½	5 18 2	3 4 10	5 12 10½	4 6 10½
Net cost	12 13 2½	11 1 9½	12 2 1½	14 14 11½	15 8 2½	12 18 9½	10 7 3	11 0 1½	10 2 3½	10 19 10	14 9 0½	13 0 5½	17 17 9½	17 15 7½	16 17 0
Net {Profit	4 8 8½	10 19 2½	9 18 11½	7 6 1	6 12 9½	9 2 3	11 13 9½	9 5 4½	8 2 5	14 15 9	7 13 6½	12 14 6½	—	5 17 5½	—
Net {Loss	—	—	—	—	—	—	—	—	—	—	—	—	3 7 0½	—	4 16 0

* *Vide* Appendix C. † *Vide* Appendix D.

Field Costs and Returns Per Acre—*continued.*

Field Number	17	18	21	22	23	24	25	26	27	28	29	30	31	32
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	19 9½	13 9½	1 13 7½	1 6 9½	1 1 11	17 0	18 5	1 9 11½	1 11 10	1 12 8½	13 11½	19 4½	14 11½	1 9 6½
Sub-soiling	—	—	—	—	18 4	12 3	16 8	—	—	13 7½	—	—	—	—
Cultivating	6 6½	6 4	4 0½	18 10½	8 3½	4 1½	—	9 5½	5 3½	2 10½	—	—	—	7 8½
Steam tackle	1 6 10½	1 5 6	—	—	—	—	—	—	—	—	—	—	—	—
Harrowing	4 10½	3 2½	3 8	5 6	6 5½	6 9½	9 2	6 0½	5 10½	11 3½	4 0½	5 10½	4 11	9 0½
Rolling	7 4½	7 11	2 5	14 8	8 7½	10 2½	7 4	5 5½	3 0½	4 6½	5 1½	2 6½	9	4 7
Other work	3 5½	2 2	—	14 3½	—	—	—	—	—	—	2 8	—	3 11	—
Preliminary cultivations	3 8 10½	2 18 11	2 3 8½	4 0 1	3 3 8	2 10 4½	2 11 7	2 10 11½	2 6 0½	3 5 0½	1 5 9½	1 7 9½	1 4 6½	2 10 10½
Seed	7 0	7 0	8 2	7 0	10 0	9 11	9 11	8 9	8 9	11 8	8 9	8 9	8 9	9 4
Drilling	2 7	2 1½	2 8½	3 9½	3 6½	3 3½	4 1½	1 0	10	2 0½	1 5½	1 10½	1 5	2 11
Bunching, singling and hand hoeing	2 6 6½	2 5 0	—	4 9 2	3 1 0½	3 16 2	5 5 1½	1 13 5½	1 19 10½	2 4 6½	1 14 0½	1 18 8	1 13 8½	2 11 3½
Horse hoeing	14 4½	7 7½	—	15 10	11 3½	6 9½	17 0½	14 1½	15 3½	10 3	13 1½	12 7½	15 8	11 6
Other work	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Seed, drilling and after cultivations	3 10 6½	3 1 9½	—	5 15 9½	4 5 11	4 16 2	6 16 2½	2 17 4	3 4 8½	3 8 6	2 17 4½	3 1 11½	2 19 6½	3 15 0½
Applying manures	1 3 7½	1 3 6½	1 14 0½	3 3½	5 5	16 3	14 0½	1 1 8½	1 9	1 0 7	2 8	2 6½	1 5 7	1 4 2½
Artificials*	3 15 11	4 4 8	2 0 10	2 0 9	3 8 7½	3 0 1½	4 7 7	3 13 9	3 13 9	6 3 8	2 8 2½	2 12 3	2 10 0½	1 6 3
Dung*	4 18 5	5 5 0	3 15 0	—	—	2 2 10½	16 10½	4 10 0	—	—	—	—	3 15 0	4 8 1½
Total manures	9 17 11½	10 13 2½	7 9 10½	2 4 0½	3 14 0½	5 19 2½	5 18 5½	9 5 5½	3 15 6	7 4 3	2 10 10½	2 14 9½	7 10 7½	6 18 7
Lifting	6 8½	11 11½	—	5 1½	12 3½	11 6½	13 6½	} 1 16 2	} 1 15 11½	} 2 8 0	9 4	12 0½	6 6½	12 1½
Pull, top and lumping	2 6 10½	2 3 1½	—	3 18 8½	4 3 6½	4 12 6	3 9 3				1 18 0	1 19 3½	2 2 1	2 10 1
Loading and haulage†	1 5 6½	1 7 0½	—	2 2 2½	3 2 3	3 7 2½	3 3 7½	2 4 10	2 9 6	1 12 0	2 3 2	2 19 7½	3 10 5½	1 19 1½
Total harvesting	3 19 1½	4 2 1½	—	6 6 0½	7 18 1½	8 11 2½	7 6 5	4 1 0	4 5 5½	4 0 0	4 10 6	5 10 11½	5 19 0½	5 1 3½
Rent	1 8 3	1 8 3	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 10 0	1 10 0	1 10 0	1 10 0	1 0 0
Rates	5 0½	5 0½	3 3	4 6½	4 6½	4 6½	4 6½	3 4½	3 4½	5 0	2 9	3 5	2 5	3 9½
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	2 13 3½	2 13 3½	2 3 3	2 4 6½	2 4 6½	2 4 6½	2 4 6½	2 3 4½	2 3 4½	2 15 0	2 12 9	2 13 5	2 12 5	2 3 9½
Farm cash cost	23 9 9	23 9 3½	—	20 10 6½	21 6 3½	24 1 6½	24 17 2½	20 18 1½	15 15 0½	20 12 9½	13 17 3½	15 8 11½	20 6 1½	20 9 7½
Transport and Grower's Representative	2 14 0½	3 13 9½	Crop failed and ploughed up.	2 17 6½	2 17 6½	2 17 6½	2 17 6½	4 0 9	3 9 9½	3 10 10½	2 13 4½	3 14 0½	2 6 0½	1 9 7½
Total cash cost	26 3 9½	27 3 1½		23 8 1	24 3 10½	26 19 1	27 14 9	24 18 10½	19 4 10	24 3 8	16 10 8	19 3 0	22 12 2½	21 19 3
Gross cash receipts	21 17 11	29 11 2½		31 9 0	31 9 0	31 9 0	31 9 0	28 16 8½	30 5 4½	24 7 10½	21 17 3½	27 0 10	18 9 0½	9 3 11½
Cash {Profit	—	2 8 1		8 0 11	7 5 1½	4 9 11	3 14 3	3 17 10½	11 0 6½	4 2½	5 6 7½	7 17 10	—	—
Cash {Loss	4 5 10½	—		—	—	—	—	—	—	—	—	—	4 3 2	12 15 3½
Residual values bt. fwd.	7 6	7 6		5 0	2 5 0	1 0 0	10 0	5 0	5 0	5 0	15 0	5 0	7 6	5 0
Gross cost	26 11 3½	27 10 7½		23 13 1	26 8 10½	27 19 1	28 4 9	25 3 10½	19 9 10	24 8 8	17 5 8	19 8 0	22 19 8½	22 4 3
Resid. Cult. values cd. fwd.	1 6 2½	1 0 6		16 10½	1 5 3½	15 0½	1 5 8½	14 1	13 5½	1 6 3½	9 10½	9 5½	11 9	10 7½
„ Man. „ „	3 8 2½	3 11 5½		10 4½	18 8	1 17 0½	1 11 1½	2 17 2½	12 2½	1 10 11	8 10½	8 8½	2 8 8	2 12 9½
Tops†	2 12 0	3 12 6		2 15 0	3 15 0	2 15 0	2 15 0	2 12 0	2 6 6	2 5 0	3 0 6	4 10 0	3 7 6	1 10 0
Total credits	7 6 4½	8 4 5½		4 2 2½	5 18 11½	5 7 1½	5 11 10	6 3 3½	3 12 2	5 2 2½	3 19 2½	5 8 1½	6 7 11	4 13 5½
Net cost	19 4 11	19 6 1½		19 10 10½	20 9 10½	22 11 11½	22 12 11	19 0 6½	15 17 8	19 6 5½	13 6 5½	13 19 10½	16 11 9½	17 10 9½
Net {Profit	2 13 0	10 5 0½		11 18 1½	10 19 1½	8 17 0½	8 16 1	9 16 2	14 7 8½	5 1 5½	8 10 10	13 0 11½	1 17 3	—
Net {Loss	—	—	—	—	—	—	—	—	—	—	—	—	—	8 6 10½

* *Vide* Appendix C. † *Vide* Appendix D.

Field Costs and Returns Per Acre—*continued.*

Field Number	33	34	35	36	37	38	39	40	41	42	43	44	45
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	1 5 5	1 1 1	19 8	2 7 11	1 7 9	1 3 8½	14 3½	1 4 6	1 18 3½	14 8½	1 19 0½	15 2½	1 10 9
Sub-soiling	—	—	—	—	—	—	—	1 4 5½	—	—	—	17 11½	—
Cultivating	9 2½	—	4 8½	2 9½	—	—	—	—	7 9	3 0½	9 8½	1 11½	6 6½
Steam tackle	—	12 9	—	—	—	—	—	—	14 0	—	—	—	—
Harrowing	1 4½	6 5	9 5½	15 5½	7 11	3 4½	6 9½	1 2 10½	7 0½	4 5½	10 5½	7 8½	7 0½
Rolling	3 2½	7 0	6 11½	8 6	2 9	2 4½	—	—	3 8½	3 8½	6 9½	3 9½	2 2
Other work	—	—	—	5	11 7	1 5 1½	8 11½	15 1	—	1 10½	4 9½	3 7½	—
Preliminary cultivations	1 19 2½	2 7 3	2 0 8½	3 15 1½	2 10 0	2 16 6½	1 9 11½	4 6 11½	3 15 9½	1 7 9½	3 10 8½	2 10 2½	2 6 5½
Seed	9 4	9 2	8 9	8 9	8 2	8 1½	7 5	7 0	8 9	10 6	10 6	10 6	8 2
Drilling	2 3½	2 1½	1 6½	2 7½	1 0½	2 3½	2 8½	2 1½	3 2½	2 3½	2 11½	2 7	2 2½
Bunching, singling and hand hoeing	2 9 7	2 18 11½	1 19 6	2 5 5½	2 5 11	3 7 6½	3 3 9½	1 12 11½	1 15 0	1 14 8	1 16 5½	2 5 4½	2 4 2½
Horse hoeing	8 1	12 11½	9 3½	1 1 6½	10 10	16 0½	19 0½	10 4½	1 11 10½	19 9	17 7½	10 9½	8 5½
Other work	—	—	—	—	—	—	—	—	—	—	—	—	—
Seed, drilling and after cultivations	3 9 3½	4 3 2½	2 19 1	3 18 4	3 5 11½	4 14 0	4 12 11½	2 12 5½	3 18 9½	3 7 2½	3 7 6½	3 9 3½	3 3 0
Applying manures	2 8½	1 5 6½	19 5½	1 12 0½	1 5 10	1 0½	1 7 11	2 0 2	17 1½	2 5	1 9½	2 0	1 9 2½
Artificials*	1 6 0½	2 7 4½	5 16 0½	3 19 0	4 5 7½	2 1 5	2 7 4	2 18 9½	3 1 5	3 4 11	2 17 10½	3 10 0	3 0 0
Dung*	—	6 19 3	3 15 0	4 10 0	3 12 0	—	2 14 6½	4 10 0	2 12 6	—	—	—	3 15 0
Total manures	1 8 9	10 12 2½	10 10 6	10 1 0½	9 3 5½	2 2 5½	6 9 9½	9 8 11½	6 11 0½	3 7 4	2 19 8	3 12 0	8 4 2½
Lifting	} 4 10 0	5 11	6 11	13 7½	} 4 16 6	7 4½	6 2½	} 2 5 0	} 2 1 1½	12 11	9 4½	12 6½	4 6½
Pull, top and lumping		4 1 8½	4 15 2	2 15 0	2 13 9	2 3 11	2 3 11			2 5 0	2 5 0	2 5 0	3 6 8½
Loading and haulage†	1 0 0	2 1 3½	2 3 5	19 8	3 18 4½	1 17 9½	4 7 11	3 9 0½	16 8	1 11 3½	5 2½	2 13 0½	1 6 5½
Total harvesting	5 10 0	6 8 6	7 5 6	4 8 3½	4 16 6	6 19 5½	4 7 11	5 14 0½	2 17 9½	4 9 2½	2 19 7	5 11 4½	4 17 8½
Rent	17 6	1 10 0	1 10 0	1 5 0	1 10 0	2 0 0	2 0 0	1 15 0	1 5 0	1 7 6	1 7 6	1 7 6	1 5 0
Rates	3 5½	3 3½	3 3½	3 0	3 10	5 0	5 0	3 4½	5 7	7 4	7 4	7 4	5 5½
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	2 0 11½	2 13 3½	2 13 3½	2 8 0	2 13 10	3 5 0	3 5 0	2 18 4½	2 10 7	2 14 10	2 14 10	2 14 10	2 10 5½
Farm cash cost	14 8 1½	26 4 5½	25 9 1½	24 10 9½	22 9 9	19 17 5½	20 5 8	25 0 9½	19 14 0	15 6 4½	15 12 4	17 17 8½	21 1 9½
Transport and Grower's Representative	2 1 10½	1 15 4½	3 6 5½	1 19 5	3 5 6½	3 16 8	2 0 4½	2 16 9½	1 19 3½	1 2 0½	1 18 7½	2 10 7½	2 0 3
Total cash cost	16 10 0½	27 19 10	28 15 6½	26 10 2½	25 15 3½	23 14 1½	22 6 0½	27 17 7½	21 13 3½	16 8 5	17 10 11½	20 8 3½	23 2 0½
Gross cash receipts	15 0 5½	28 10 7	23 7 5½	24 8 8½	25 11 6½	23 3 4½	13 15 10½	17 4 9½	13 8 8½	23 5 9½	18 0 6½	24 4 3½	19 6 8
Cash {Profit	—	10 9	—	—	—	—	—	—	—	6 17 4½	9 7	3 15 11½	—
Cash {Loss	1 9 7	—	5 8 0½	2 1 6½	3 8½	10 9½	8 10 2½	10 12 9½	8 4 7½	—	—	—	3 15 9½
Residual values bt. fwd.	2 7 6	2 0 0	1 2 6	5 0	5 0	2 7 6	2 5 0	7 6	5 0	15 0	5 0	15 0	5 0
Gross cost	18 17 6½	29 19 10	29 18 0½	26 15 2½	26 0 3½	26 1 7½	24 11 0½	28 5 1½	21 18 3½	17 3 5	17 15 11½	21 3 3½	23 7 0½
Resid. Cult. values cd. fwd.	8 0½	16 1½	9 0	10 1½	8 1½	12 0½	14 3	1 3 9½	1 12 10½	14 9½	16 8½	1 0 0½	8 4
" Man. " "	8 10½	3 14 8½	3 15 3½	3 0 6	3 8 5½	9 0½	16 4½	2 17 6	2 1 7½	17 8	14 5½	1 13 4	2 12 6
Tops†	2 19 6	3 17 0	3 5 0	3 6 0	3 18 0	3 6 0	1 13 0	3 0 0	1 13 6	3 18 0	3 18 0	'3 18 0	3 15 0
Total credits	3 16 5	8 7 9½	7 9 3½	6 16 7½	7 14 7	4 7 1	3 3 7½	7 1 3½	5 8 0	5 10 5½	5 9 2½	6 11 4½	6 15 10
Net cost	15 1 1½	21 12 0½	22 8 9	19 18 7	18 5 8½	21 14 6½	21 7 5½	21 3 10	16 10 3½	11 12 11½	12 6 9	14 11 11	16 11 2½
Net {Profit	—	6 18 6½	18 8½	4 10 1½	7 5 10½	1 8 9½	7 11 7½	—	—	11 12 10	5 13 9½	9 12 4½	2 15 0½
Net {Loss	8	—	—	—	—	—		3 19 0½	3 1 7½	—	—	—	—

* *Vide* Appendix C. † *Vide* Appendix D.

Field Costs and Returns Per Acre—*continued.*

Field Number	46	47	48	49	50	51	52	53	55	56	57	58	59
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	1 10 6½	1 8 1½	8 11	1 6 11½	2 9 3½	2 14 0	2 14 3	1 17 6½	2 1 3½	2 10 8½	2 5 10½	1 19 8½	17 6
Sub-soiling	—	—	—	—	—	13 3½		—	—	—	—	—	—
Cultivating	7 6	—	8 4	4 10	4 10	—	10 3	3 5½	—	10 0½	11 1½	5 9½	2 10½
Steam tackle	—	—	—	—	—	2 7 1½	—	—	—	—	—	—	—
Harrowing	4 6½	5 2	4 11	9 9½	7 8½	10 0½	11 10	10 4	1 3 2½	9 5	16 10½	5 9½	2 10½
Rolling	1 5½	7½	3 9½	3 6½	5 7½	10 2½	14 5½	8 11	13 3½	6 5½	4 0½	4 10	2 10½
Other work	9 6½	14 1½	5 9	9 2	—	4 0½	—	—	—	—	2 7½	—	—
Preliminary cultivations	2 13 6½	2 8 0½	1 11 8½	2 14 3½	3 7 5½	6 18 9½	4 10 9½	3 0 3	3 17 9½	3 16 7½	4 0 6	2 16 2	1 6 1½
Seed	8 2	8 9	8 2	5 3	10 6	9 8½	8 9	6 6½	10 6	12 5	10 6	8 2	8 8½
Drilling	2 9	2 7	1 5½	3 4½	2 10½	2 8½	3 3½	3 2½	3 9	2 4½	2 5½	4 10	3 8
Bunching, singling and hand hoeing	1 8 0	2 18 10½	1 16 10½	1 5 8½	2 13 6½	3 5 11	4 18 0	2 7 2½	3 5 5½	2 5 3½	3 1 8½	3 8 9	2 19 11½
Horse hoeing	12 5½	13 4½	14 2	6 5½	12 6½	8 5½	13 9½	11 9½	12 6½	18 2	13 2½	5 10½	9 5
Other work	—	—	—	—	—	—	—	3 11½	—	—	—	—	—
Seed, drilling and after cultivations	2 11 4½	4 3 6½	3 0 8	2 0 9½	3 19 5½	4 6 10	6 3 10	3 12 8½	4 12 2½	3 18 2½	4 7 9½	4 7 7½	4 1 9
Applying manures	1 3½	1 0½	4 8½	19 10	15 7½	5 4½	7½	1 3 5	1 7 4½	1 2 3½	6 6½	1 16 8½	6 8
Artificials*	2 8 7	3 12 3	3 13 0	17 0	13 2	3 11 1½	5 7	2 14 0	6 7½	1 1 9	1 17 3½	2 0 5½	2 12 1½
Dung*	—	—	—	3 7 6	3 0 0	—	—	2 12 6	3 15 0	4 1 10	1 7 3½	5 5 0	—
Total manures	2 9 10½	3 13 3½	3 17 8½	5 4 4	4 8 9½	3 16 6	6 2½	6 9 11	5 8 11½	6 5 10½	3 11 1	9 2 1½	2 18 9½
Lifting	2 0 0	2 0 0	2 0 0	5 0	8 9	11 2½	18 10½	11 8½	6 6½	9 3	5 3½	?	8 4½
Pull, top and lumping				3 3 0½	4 13 11½	3 0 7½	3 14 10½	2 6 0½	1 13 4			?	4 1 7½
Loading and haulage†	2 4 4½	2 4 3½	2 4 4			4 7 7½	1 14 4	1 12 2½	2 8 0	5 6 8½	4 1 4	?	1 8 2½
Total harvesting	4 4 4½	4 4 3½	4 4 4	3 8 0½	5 2 8½	7 19 5½	6 8 1½	4 10 0½	4 7 10½	5 15 11½	4 6 7½	?	5 18 2
Rent	1 10 0	1 10 0	1 10 0	1 12 0	1 12 0	1 0 0	1 0 0	16 0	1 15 0	1 15 0	1 15 0	1 4 0	1 12 0
Rates	5 0	5 0	5 0	5 10	5 10	1 8	3 2½	5 5½	7 9½	7 9½	7 9½	3 0	9 3
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	2 15 0	2 15 0	2 15 0	2 17 10	2 17 10	2 1 8	2 3 2½	2 1 5½	3 2 9½	3 2 9½	3 2 9½	2 7 0	3 1 3
Farm cash cost	14 14 2	17 4 2½	15 9 4½	16 5 3½	19 16 2½	25 3 2½	19 12 1½	19 14 4½	21 9 8	22 19 5½	19 8 10	?	17 6 1
Transport and Grower's Representative	2 18 3½	2 18 3½	2 18 4	1 13 1½	1 16 4½	2 3 3½	3 6 6½	3 7 5½	2 0 7½	2 0 7½	2 0 7½		2 7 5
Total cash cost	17 12 5½	20 2 6	18 7 8½	17 18 5½	21 12 7½	27 6 6	22 18 8½	23 1 9½	23 10 3½	25 0 1	21 9 5½		19 13 6
Gross cash receipts	19 1 9	19 1 9	19 1 9	18 15 8½	21 18 0½	10 3 10½	10 4 10½	19 15 8½	21 17 5½	21 17 5½	21 17 5½	Costs incomplete.	19 19 11½
Cash {Profit	1 9 3½	—	14 0½	16 10½	5 5	—	—	5 5½	7 9½	—	8 0		6 5½
Cash {Loss	—	1 0 9	—	—	—	17 2 7½	12 13 10	3 6 1	1 12 10	3 2 7½	—		—
Residual values bt. fwd.	7 6	7 6	7 6	5 0	5 0	1 16 0	1 4 0	2 15 0	5 0	5 0	1 0 0		1 15 0
Gross cost	17 19 11½	20 10 0	18 15 2½	18 3 5½	21 17 7½	29 2 6	24 2 8½	25 16 9½	23 15 3½	25 5 1	22 9 5½		21 8 6
Resid. Cult. values cd. fwd.	13 4½	10 0½	14 1½	6 10	11 4½	1 18 9½	13 9½	8 10½	9 4½	13 7½	9 10½	6 5½	6 10
„ Man. „ „	12 1½	18 0½	14 10½	1 14 7½	1 10 2½	1 0 5½	—	1 19 9	2 0 9½	2 5 3½	18 0½	3 5 6½	10 6
Tops†	1 18 6	1 18 6	1 18 6	2 4 0	2 9 6	1 13 0	1 6 0	2 15 0	2 19 6	2 19 6	2 19 6		2 12 0
Total credits	3 4 0	3 6 7½	3 7 6	4 5 5½	4 11 1½	4 12 2½	1 19 9½	5 3 7½	5 9 8½	5 18 5½	4 7 5		3 9 4
Net cost	14 15 11½	17 3 4½	15 7 8½	13 17 11½	17 6 5½	24 10 8½	22 2 10½	20 13 2½	18 5 7½	19 6 7½	18 2 0½		17 19 2
Net {Profit	4 5 9½	1 18 4½	3 14 0½	4 17 4	4 11 6½	—	—	—	3 11 10½	2 10 10	3 15 5		2 0 9½
Net {Loss	—	—	—	—	—	14 6 4½	11 18 0½	17 5½	—	—	—		—

* *Vide* Appendix C † *Vide* Appendix D.

Field Costs and Returns Per Acre—*continued.*

Field Number.	60	61	62	63	64	65	66	67	68	69	70	71	72
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	1 9 4½	1 15 8	2 17 3½	1 7 2½	18 0	1 10 6½	1 13 8½	1 13 2	16 11	17 4	2 6 6	2 4 10½	2 6 0½
Sub-soiling	17 7	—	—	—	—	1 1	—	—	—	4 11½	17 10½	16 5½	—
Cultivating	17 9	5 1	6 10	5 7½	—	5 9½	2 10	5 1½	—	—	5 8	6 6½	1 2 5½
Steam tackle	—	—	—	—	—	—	—	—	—	—	—	—	—
Harrowing	10 5	9 11	6 3½	6 3½	5 8½	5 9½	7 0	5 1½	7 9	6 11½	3 0	4 11½	2 11½
Rolling	2 7	6 1½	3 0½	2 8½	3 2½	2 3½	4 3½	3 7½	7 2	5 2	11 10½	7 9½	11 0½
Other work	—	—	—	—	—	—	—	—	—	—	—	—	5 11
Preliminary cultivations	3 17 8½	2 16 9½	3 13 5½	2 1 9½	1 6 11½	2 5 6½	2 7 10	2 7 0½	1 11 10	1 14 4½	4 4 11	4 0 7	4 8 4½
Seed	16 0	8 2	8 9	7 11½	8 0½	8 9	8 9	9 4	9 4	8 9	8 0½	7 1	8 9
Drilling	4 1½	2 4	2 2½	2 0½	1 11½	1 8	1 9	2 7½	3 4	3 5	1 11½	2 6½	1 11½
Bunching, singling and hand hoeing	—	1 12 5	3 9 11½	3 15 0½	2 1 5½	3 18 4½	4 2 10½	4 1 5½	3 11 4	3 10 0	1 10 10	3 1 7½	3 6 1½
Horse hoeing	—	17 2	11 5½	8 3½	10 6½	7 9½	11 0½	12 11½	9 8	13 0½	1 1 3½	9 10½	1 0 8½
Other work	—	—	—	—	—	—	—	10 7½	—	—	—	—	—
Seed, drilling and after cultivations	—	3 0 1	4 12 4½	4 13 4½	3 2 0	4 16 6½	5 4 4½	5 17 0	4 13 8	4 15 2½	3 2 1½	4 1 1½	4 17 6½
Applying manures	1 8 1	1 0 9	3 5	13 1½	5 7	2 4½	3 11	2 6 9	1 6	16 6½	2 6 1	2 1 10½	1 8 11½
Artificials*	2 7 6	2 14 4	4 0 1½	2 4 7½	4 17 10½	3 8 9½	3 18 4½	1 9 4½	3 3 7	6 6 8½	2 1 4½	1 11 1	—
Dung*	3 15 0	3 15 0	—	1 19 6	—	—	—	8 12 6	—	1 10 0	5 16 8	6 0 0	4 10 0
Total manures	7 10 7	7 10 1	4 3 6½	4 17 2½	5 3 5½	3 11 2½	4 2 3½	12 8 7½	3 5 1	8 13 3	10 4 1½	9 12 11½	5 13 11½
Lifting	—	17 7½	12 7	11 8½	11 6	11 9½	19 3½	16 10	18 11	15 9	3 0 8½	12 5½	10 2½
Pull, top and lumping	—	2 9 7	3 19 4	3 14 9	3 14 9	5 6 11½	3 4 1½	3 6 2½	2 5 9	4 12 8	2 0 0	2 5 0	2 5 0
Loading and haulage†	—	4 18 6	4 8 0½	6 6 5½	4 4 0½	5 3 7½	5 3 7½	4 7 6½	2 12 1	2 0 8	4 1 0	5 1 7	3 12 10½
Total harvesting	—	8 5 8½	8 19 11½	6 18 2	8 10 3½	5 18 8½	9 7 0	8 10 6½	5 16 9	7 9 1	7 1 8½	7 14 0½	6 8 1½
Rent	1 0 0	1 4 5½	1 4 5½	1 4 5½	1 4 5½	1 4 5½	1 4 5½	16 9	1 15 0	3 10 0	12 9	12 9	1 10 0
Rates	3 3	4 8	4 8	4 8	4 8	4 8	4 8	2 4½	5 3	6 3½	3 1½	3 1½	4 1½
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	2 3 3	2 9 1½	2 9 1½	2 9 1½	2 9 1½	2 9 1½	2 9 1½	1 19 1½	3 0 3	4 16 3½	1 15 10½	1 15 10½	2 14 1½
Farm cash cost	—	24 1 9½	23 18 5½	20 19 8½	20 11 10	19 1 1½	23 10 7½	31 2 4½	18 7 7	27 8 2½	26 8 8½	27 4 6½	24 2 0½
Transport and Grower's Representative		3 6 10	2 10 11½	2 8 11½	2 2 4½	1 19 9	2 7 5½	3 0 11½	1 19 5	3 10 0	1 17 4½	2 13 5½	2 10 0½
Total cash cost		27 8 7½	26 9 5	23 8 8½	22 14 2½	21 0 10½	25 18 0½	34 3 3½	20 7 0	30 18 2½	28 6 1½	29 18 0½	26 12 1
Gross cash receipts		34 8 10	26 6 8½	27 18 5	20 11 1½	23 6 6½	23 17 0½	21 1 9½	19 12 1½	36 4 2½	17 13 3	28 18 7½	25 11 7½
Cash {Profit	Partly failed; re-drilled; completely failed and ploughed up.	7 0 2½	—	4 9 8½	—	2 5 7½	—	—	—	5 6 0	—	—	—
Cash {Loss		—	2 8½	—	2 3 1½	—	2 1 0	13 1 6½	14 10½	—	10 12 10½	19 5	1 0 5½
Residual values bt. fwd.		5 0	5 0	10 0	1 10 0	10 0	7 6	7 6	7 6	3 10 0	10 0	10 0	16 0
Gross cost		27 13 7½	26 14 5	23 18 8½	24 4 2½	21 10 10½	26 5 6½	34 10 9½	20 14 6	34 8 2½	28 16 1½	30 8 0½	27 8 1
Resid. Cult. values cd. fwd.		12 10 2½	10 7½	8 2½	7 11½	8 7	8 3½	11 8½	7 2	13 1	1 9 10½	1 0 4	1 0 6½
„ Man. „ „		2 11 6½	19 9½	1 14 10½	1 2 9½	18 6	18 0½	4 17 7½	15 11	2 8 5	3 7 4	3 7 9½	2 5 0
Tops†		2 9 6	2 4 0	2 4 0	2 4 0	2 6 6	3 7 6	2 15 0	3 5 0	4 10 0	3 0 0	4 10 0	3 7 6
Total credits		5 13 11½	3 14 4½	4 7 1½	3 14 9	3 13 7	4 13 10	8 4 4	4 8 1	7 11 6	7 17 2½	8 18 1½	6 13 0½
Net cost		21 19 8	23 0 0½	19 11 7	20 9 5½	17 17 3½	21 11 8½	26 6 5½	16 6 5	26 16 8½	20 18 10½	21 9 11	20 15 0½
Net {Profit		12 9 2	3 6 8	8 6 10	1 7½	5 9 2½	2 5 4	—	3 5 8½	9 7 6	—	7 8 8½	4 16 7
Net {Loss		—	—	—	—	—	—	5 4 8½	—	—	3 5 7½	—	—

* *Vide* Appendix C *Vide* Appendix D.

Field Costs and Returns Per Acre—*continued.*

Field Number	73	74	75	76	77	78	82	83	84	85	86	87	88
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	1 4 11	17 9½	1 7 0½	1 14 5	9 2½	15 10	—	1 13 9½	1 17 6	1 6 1½	1 13 11½	1 11 3	1 18 1½
Sub-soiling	—	—	—	—	—	14 6	—	—	—	—	—	—	—
Cultivating	9 1½	5 10	—	5 3	3 4½	1 6	—	9 8½	4 1½	14 5	7 9½	9 1	—
Steam tackle	—	—	—	1 1 7½	1 6 6	—	—	—	—	—	—	—	—
Harrowing	3 6½	4 11	12 8½	3 1½	11 7½	6 1	1 3½	11 7	7 11½	6 6½	11 0	10 11½	5 11½
Rolling	5 11½	4 11	9 11½	4 10½	6 11	6 4½	2 8½	7 7½	1 8½	9 5	10 6½	2 1½	1 11½
Other work	—	—	—	3 4½	1 9	—	1 6 3	—	19 5	2 8½	6 3½	17 4	14 8½
Preliminary cultivations	2 3 6½	1 13 5½	2 9 8½	3 12 7½	2 19 4½	2 4 3½	1 10 3½	3 2 9	3 10 8½	2 19 3	3 9 7½	3 10 9½	3 0 8½
Seed	8 9	8 9	5 10	7 0	7 11	7 0	4 8	6 7½	7 0	10 4	10 6	7 0	7 0
Drilling	1 8½	1 8	1 8½	3 0½	3 2½	1 6½	1 9½	3 7½	2 11	3 10	4 6½	4 5	2 8
Bunching, singling and hand hoeing	2 12 9½	2 14 0	1 15 0	3 0 0	2 17 1½	2 15 0	18 7½	3 4 6½	2 18 7½	3 3 7½	2 0 6	2 17 7½	2 14 10½
Horse hoeing	1 6 11½	1 2 2½	1 14 9½	7 3½	12 3	1 4 4½	1 4 1½	14 5	2 11½	12 8	13 6	9 4	6 2½
Other work	—	—	—	—	—	6½	—	—	—	—	—	—	—
Seed, drilling and after cultivations	4 10 2½	4 6 7½	3 17 4½	3 17 4	4 0 6	4 8 5½	2 9 3½	4 9 2½	3 11 6	4 10 5½	3 9 0½	3 18 4½	3 10 9½
Applying manures	1 5 3½	1 0½	3 0	4 5½	11 4½	1 6 10½	10½	2 15 9½	1 2½	5 5½	3 7½	1 7 8½	11½
Artificials*	1 14 0	1 11 6½	1 10 0	3 9 10½	1 3 11½	2 16 0	1 12 0	2 0 3	1 5 0½	5 15 7	4 4 9½	3 14 4½	4 7 0
Dung*	4 2 6	—	—	—	2 19 7½	3 12 2½	—	3 15 0	—	—	—	1 17 6	—
Total manures	7 1 9½	1 12 7½	1 13 0	3 14 4	4 14 10½	7 15 0½	1 12 10½	8 11 0½	1 6 3½	6 1 0½	4 8 5½	6 19 7½	4 7 11½
Lifting	13 9½	7 8	2 15 0	15 11½	15 0	10 2	1 1 2	11 8½	1 10 0	8 9	11 0½	8 5½	7 10
Pull, top and lumping	2 0 0	7 11 4½	3 0 0	3 1 2½	3 1 2½	1 18 6	3 1 3	2 2 8	2 12 10½	2 6 0	1 15 9½	2 0 0
Loading and haulage†	1 9 1½	2 18 0	2 6 0½	2 8 7½	14 7	2 16 0	2 8 6½	14 8½	1 17 10½	2 8 10½	1 18 11½	1 4 7½
Total harvesting	4 2 11	7 19 0½	5 13 0	6 1 11½	6 4 10½	3 3 3	6 18 5	5 2 11	2 4 8½	4 19 6½	5 5 10½	4 3 2½	3 12 8½
Rent	1 10 0	1 10 0	1 15 0	1 5 0	1 6 7	1 5 0	2 0 0	1 5 0	1 5 0	1 10 0	1 10 0	1 3 0	1 3 0
Rates	4 1½	4 1½	15 11	2 6	3 6½	3 8	11 1	3 9½	2 8	5 10	5 10	4 3	4 3
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	2 14 1½	2 14 1½	3 10 11	2 7 6	1 10 1½	2 8 8	3 11 1	2 8 9½	2 7 8	2 15 10	2 15 10	2 7 3	2 7 3
Farm cash cost	20 12 7	18 5 9½	17 3 11½	19 13 9½	19 9 9½	19 19 8½	16 1 11½	23 14 8	13 0 10½	21 6 1½	19 8 9½	20 19 3	16 19 1½
Transport and Grower's Representative	2 10 0½	2 10 0½	1 11 9½	2 1 4½	3 11 6½	2 17 2½	1 0 5½	2 13 1½	2 9 9½	2 11 8½	2 9 9½	2 3 7½	2 3 0½
Total cash cost	23 2 7½	20 15 10	18 15 9½	21 15 2	23 1 3½	22 16 10½	17 2 4½	26 7 9½	15 10 7½	23 17 10	21 18 7½	23 2 10½	19 2 2½
Gross cash receipts	25 11 7½	25 11 7½	19 8 2	25 7 0½	24 7 8½	18 14 11½	20 17 2	22 11 10½	23 8 9½	25 6 6½	24 10 2	20 12 1½	13 3 11
Cash {Profit	2 9 0½	4 15 9½	12 4½	3 11 10½	1 6 4½	—	3 14 9½	—	7 18 1½	1 8 8½	2 11 6½	—	—
Cash {Loss	—	—	—	—	—	4 1 11½	—	3 15 10½	—	—	—	2 10 9½	5 18 3½
Residual values bt. fwd.	5 0	1 0 0	2 5 0	5 0	5 0	1 2 6	15 0	5 0	10 0	2 0 0	1 10 0	1 5 0	1 5 0
Gross cost	23 7 7½	21 15 10	21 0 9½	22 0 2	23 6 3½	23 19 4½	17 17 4½	26 12 9½	16 0 7½	25 17 10	23 8 7½	24 7 10½	20 7 2½
Resid. Cult. values cd. fwd.	1 3 9	18 7½	1 6 1½	18 3½	11 2	1 8 0	18 0	14 3½	4 2½	13 6	13 7½	9 0	4 9
„ Man. „ „	2 12 7	10 0½	17 8½	17 11	1 15 9½	2 16 11½	8 0	2 6 11½	4 0	1 16 10	1 3 0½	1 18 5½	14 6
Tops†	2 9 6	2 19 6	2 14 0	3 7 6	2 9 6	3 15 0	1 7 0	2 5 0	3 6 0	5 5 0	5 5 0	2 4 0	2 15 0
Total credits	6 5 10	4 8 8½	4 17 9½	5 3 8½	4 16 5½	7 19 11½	2 13 0	5 6 3	3 14 2½	7 15 4	7 1 8½	4 11 5½	3 14 3
Net cost	17 1 9½	17 7 1½	16 2 11½	16 16 5½	18 9 10½	15 19 5	15 4 4½	21 6 6½	12 6 4½	18 2 6	16 6 11	19 16 5½	16 12 11½
Net {Profit	8 9 10	8 4 5½	3 5 2½	8 10 6½	5 17 9½	2 15 6½	5 12 9½	1 5 4½	11 2 4½	7 4 0½	8 3 3	15 8½	—
Net {Loss	—	—	—	—	—	—	—	—	—	—	—	—	3 9 0½

* *Vide* Appendix C. † *Vide* Appendix D.

Field Costs and Returns Per Acre—*continued.*

Field Number	89	90	91	92	93	94	95	96	97	98	99	100	101
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	17 11½	1 12 9½	2 9 11½	1 16 3	1 8 8	1 5 2	1 3 8½	1 6 6½	1 13 7	1 7 6½	1 6 7½	1 6 1½	18 10½
Sub-soiling	—	—	—	—	14 10½	9 7	—	—	—	—	—	—	—
Cultivating	5 7	4 3½	—	—	—	10 7	9 4½	4 4	10 8	11 9	6 10	—	2 11½
Steam tackle	—	—	—	—	—	—	—	—	—	—	—	—	—
Harrowing	8 10½	8 6½	6 11½	12 8	13 6½	2 8	2 9	3 11	1 2 0½	7 6	3 1½	10 4	14 10½
Rolling	4 3½	4 5½	3 6½	14 5	5 7½	5 11½	8 9½	2 0	2 9½	8 8½	5 5½	7 0	9 0½
Other work	17 5½	19 2½	17 2½	—	—	7 6	—	—	1 4½	—	1 1½	—	2 11½
Preliminary cultivations	2 14 1½	3 9 4	3 17 7½	3 3 4	3 2 8½	3 1 0½	2 4 7½	1 16 9½	3 10 6	2 15 6	2 2 2	2 3 5½	2 3 8½
Seed	7 0	5 10	7 0	3 9	7 10½	7 0	7 11½	5 10	3 9	3 9	3 9	3 2	7 0
Drilling	1 9½	3 0½	3 8½	3 2½	2 1½	3 8½	4 2½	3 0½	1 6½	1 10½	4 3½	2 8½	4 3
Bunching, singling and hand hoeing	2 1 3	3 1 11½	3 5 2	1 19 7½	1 16 0	2 0 5½	1 13 9½	1 10 1½	1 13 3	2 12 0½	1 16 3	1 7 11½	3 11 9
Horse hoeing	6 2½	11 9½	15 4½	13 6	13 11½	13 1½	7 2½	11 1½	14 10	11 4	5 5½	3 8	11 11½
Other work	—	—	—	—	—	—	19 7	—	—	—	—	—	—
Seed, drilling and after cultivations	2 16 3	4 2 3	4 11 3½	3 5 1½	2 19 11½	3 4 3½	3 12 9	2 10 1½	2 18 9½	3 14 0½	2 15 2½	2 7 6½	4 15 4½
Applying manures	1 0 3	1 3 1½	2 12 2	1 17 11½	2 4½	19 4	17 4½	—	16 2½	1 5½	3 4	3 3	5 9½
Artificials*	2 1 10	3 3 1½	3 12 3½	3 17 0	1 13 1½	3 0 9½	15 3	—	1 16 9½	2 16 5½	1 12 0	2 12 8½	2 12 8½
Dung*	4 10 0	4 0 7½	3 15 0	3 5 7½	—	4 15 6	3 15 0	—	3 0 0	—	—	—	—
Total manures	7 12 1	8 11 10½	9 19 5½	9 0 7½	1 15 5½	8 15 7½	5 7 7½	—	5 12 11½	2 17 11	1 15 4	2 16 4½	2 18 6½
Lifting	1 6 8	8 8	10 11½	11 3	10 2½	9 11½	19 2½	15 7½	10 3½	9 0½	6 5½	15 6	15 6
Pull, top and lumping		2 0 1½	2 0 6	2 1 1½	1 15 0	2 4 3	3 4 4½	2 15 0	2 0 0	2 10 0½	1 18 2½	2 10 0	2 10 0
Loading and haulage†	18 11½	1 5 3	1 14 4½	1 12 7	1 15 11	1 2 0½	1 5 6	2 2 8	2 15 10	1 9 3½	10 4½	2 0 0	2 0 0
Total harvesting	2 5 7½	3 14 5½	4 5 10½	4 4 11½	4 1 1½	3 16 2½	5 9 1	5 13 3½	5 6 1½	4 8 4½	2 15 1½	5 5 6	5 5 6
Rent	1 3 0	1 0 0	1 10 0	1 10 0	1 6 0½	1 5 0	2 0 10	2 0 0	10 0	1 0 0	3 7 6	18 3	18 3
Rates	4 3	5 5½	4 2	5 5	5 5½	6 5	6 3	6 0	2 0½	8 5½	7 0	2 1	2 1
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	2 7 3	2 5 5½	2 14 2	2 15 5	2 11 5½	2 11 5	3 7 1	3 6 0	1 12 0½	2 8 5½	4 14 6	2 0 4	2 0 4
Farm cash cost	17 15 3½	22 3 9½	25 8 5	22 9 5	14 10 9	21 8 6½	20 1 2	13 6 2	19 0 6	16 4 3½	14 2 3½	14 13 2	17 8 5
Transport and Grower's Representative	10 5½	2 15 11	2 5 0½	1 4 8½	1 8 10½	2 2 3½	2 9 9	1 0 3½	2 4 6½	2 7 6½	1 11 1½	1 9 9½	3 1 7½
Total cash cost	18 5 9	24 19 8½	27 13 5½	23 14 1½	15 19 7½	23 10 10½	22 10 11	14 6 5½	21 5 0½	18 11 9½	15 18 5½	16 2 11½	20 10 0½
Gross cash receipts	10 6 4½	31 6 8½	23 1 10½	19 19 2½	21 13 6	18 4 9½	26 0 11½	12 17 9½	19 15 5½	18 15 7½	18 10 3½	13 0 10	25 15 1½
Cash {Profit	—	6 7 0	—	—	5 13 10½	—	3 10 0½	—	—	3 9½	2 16 10	—	5 5 1½
Cash {Loss	7 19 4½	—	4 11 7½	3 14 10½	—	5 6 1	—	1 8 7½	1 9 7	—	—	3 2 1½	—
Residual values bt. fwd.	10 0	5 0	14 0	10 0	5 0	2 5 0	5 0	10 0	5 0	1 0 0	5 0	1 4 0	1 4 0
Gross cost	18 15 9	25 4 8½	28 7 5½	24 4 1½	16 4 7½	25 15 10½	22 15 11	14 16 5½	21 10 0½	19 11 9½	15 18 5½	17 6 11½	21 14 0½
Resid. Cult. values cd. fwd.	4 9	10 9½	11 6½	10 1½	1 0 4½	19 9	8 11½	8 3½	14 7½	12 6	6 1½	6 6	9 0
„ Man. „ „	3 11 1½	3 13 9	3 3 4	3 7 1½	8 11½	3 9 3	2 1 3½	—	1 8 0½	17 0	10 8	16 8	16 8
Tops†	2 5 0	3 5 0	4 10 0	2 4 0	3 5 0	2 19 6	3 5 0	2 9 6	2 4 0	2 1 3	2 0 6	1 7 6	2 0 4
Total credits	6 0 10½	7 9 6½	8 4 10½	6 1 3	4 14 4½	7 8 6	5 15 3½	2 17 9½	4 6 7½	3 10 9	2 17 3½	2 10 8	3 6 0
Net cost	12 14 10½	17 15 1½	20 2 7½	18 2 10½	11 10 3½	18 7 4½	17 0 7½	11 18 7½	17 3 4½	16 1 0½	13 1 2	14 16 3½	18 8 0½
Net {Profit	—	13 11 6½	2 19 3	1 16 4½	10 3 2½	—	9 0 3½	19 2	2 12 0½	2 14 6½	5 9 1½	—	7 7 1½
Net {Loss	2 8 5½	—	—	—	—	2 7	—	—	—	—	—	1 15 5½	—

* *Vide* Appendix C. † *Vide* Appendix D.

Field Costs and Returns Per Acre—*continued.*

Field Number	102	104	105	106	107	109	110	111	112	113	114	115	116
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	1 5 2	1 3 11	1 1 4½	1 7 1½	14 4½	18 9½	1 1 6½	19 8	19 5½	19 9	17 0½	1 5 0½	14 7½
Sub-soiling	—	—	—	—	—	—	—	—	—	—	—	—	—
Cultivating	—	7 2	8 3½	2 1	1 3½	—	—	—	—	—	1 10½	—	—
Steam tackle	—	—	—	—	—	—	—	—	—	—	—	—	—
Harrowing	8 1½	16 2½	5 8½	1 1 3	3 9	5 10	4 10½	4 10	5 10	5 5½	5 3½	5 9	4 6½
Rolling	3 0½	14 2½	10 5½	1 1 1	5 8½	6 3½	3 10	4 7½	5 0½	4 3½	3 7½	4 1½	8 7½
Other work	2 11½	2 6½	4 0½	2 7½	—	—	—	—	—	—	—	—	2 8½
Preliminary cultivations	1 19 3½	3 4 0½	2 9 10	3 14 2½	1 5 1	1 10 11	1 10 2½	1 9 1½	1 10 4½	1 9 6	1 7 10	1 14 11	1 10 6
Seed	8 2	5 3½	5 3½	8 9	8 2	8 2	8 2	8 2	8 2	8 2	8 2	8 2	8 9
Drilling	2 4	4 8½	1 8½	2 2½	2 4½	3 2	2 7½	3 3½	3 6½	3 7½	2 1½	2 6½	2 4½
Bunching, singling and hand hoeing	2 7 9½	3 2 2½	3 7 8½	1 7 10½	3 13 1½	3 1 2½	2 15 11½	3 0 5½	2 17 3½	2 10 0	2 15 9½	2 15 6½	3 10 0
Horse hoeing	5 1½	4 0	6 8½	7 3½	3 0½	8 8½	4 5	6 3	6 8	4 11½	6 11	5 6½	
Other work	—	—	—	—	—	—	—	—	—	—	—	—	—
Seed, drilling and after cultivations	3 3 4½	3 16 2½	4 1 4½	2 6 1½	3 6 8½	4 1 3	3 11 2	3 18 2½	3 15 8	3 6 9	3 12 11½	3 11 9½	4 1 1½
Applying manures	17 7½	3 7	1 8½	1 4½	3 2½	2 8½	4 6	4 2	1 11½	1 11½	2 9½	2 0½	18 11½
Artificials*	2 12 8½	2 10 8	13 1½	19 3½	2 11 0	2 11 0	2 11 0	2 11 0	2 11 0	2 11 0	2 17 9	2 11 0	1 4 6
Dung*	4 10 0	—	—	—	—	—	—	—	—	—	—	—	5 5 0
Total manures	8 0 3½	2 14 3	14 10	1 0 8	2 14 2½	2 18 8½	2 15 6	2 15 2	2 12 11½	2 12 11½	3 0 6½	2 13 0½	7 8 5½
Lifting	15 6	8 2	7 10½	11 6	} 3 3 0	} 3 3 0	} 3 3 0	} 3 3 0	} 3 3 0	} 3 3 0	} 3 3 0	} 3 3 0	8 11
Pull, top and lumping	2 10 0	3 10 0	3 10 0	2 10 0									3 0 0
Loading and haulage†	2 0 0	2 2 6½	2 2 7½	2 5 1	2 0 0	2 0 0	2 0 0	2 0 0	2 0 0	2 0 0	2 0 0	2 0 0	1 10 0
Total harvesting	5 5 6	6 0 8½	6 0 6	5 6 7	5 3 0	5 3 0	5 3 0	5 3 0	5 3 0	5 3 0	5 3 0	5 3 0	4 18 11
Rent	18 3	3 0 0	3 0 0	3 0 0	1 15 0	1 15 0	1 15 0	1 15 0	1 15 0	1 15 0	1 15 0	1 15 0	2 10 0
Rates	2 1	13 8½	13 8½	13 9	11 9	11 9	11 9	11 9	11 9	11 9	11 9	11 9	15 4
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	2 0 4	4 13 8½	4 13 8½	4 13 9	3 6 9	3 6 9	3 6 9	3 6 9	3 6 9	3 6 9	3 6 9	3 6 9	4 5 4
Farm cash cost	20 8 10½	20 8 11	18 0 3	17 1 4½	15 15 9	16 15 7½	16 6 7½	16 12 2½	16 8 9	15 18 11½	16 11 1½	16 9 5½	22 4 3½
Transport and Grower's Representative	2 17 6	3 0 3	3 0 0	1 15 7	1 3 7½	1 3 7½	1 3 7½	1 3 7½	1 3 7½	1 3 7½	1 3 7½	1 3 7½	1 13 2½
Total cash cost	23 6 4½	23 9 2	21 0 3	18 16 11½	16 19 4½	17 19 3½	17 10 3½	17 15 10½	17 12 4½	17 2 7½	17 14 9½	17 13 1½	23 17 6½
Gross cash receipts	24 15 3	28 13 10½	23 18 9½	16 10 9½	20 18 6½	20 18 6½	20 18 6½	20 18 6½	20 18 6½	20 18 6½	20 18 6½	20 18 6½	26 12 6½
Cash Profit	1 8 10½	5 4 8½	2 18 6½	—	3 19 2	2 19 3½	3 8 3½	3 2 8½	3 6 2	3 15 11½	3 3 9½	3 5 5½	2 15 0½
Cash Loss	—	—	—	2 6 1½	—	—	—	—	—	—	—	—	—
Residual values bt. fwd.	1 4 0	5 0	7 6	5 0	2 5 0	5 0	12 6	2 5 0	2 5 0	2 5 0	1 10 0	2 5 0	6 0
Gross cost	24 10 4½	23 14 2	21 7 9	19 1 11½	19 4 4½	18 4 3½	18 2 9½	20 0 10½	19 17 4½	19 7 7½	19 4 9½	19 18 1½	24 3 6½
Resid. Cult. values cd. fwd.	3 10	5 0	8 6	5 6	2 3	6 6	3 4	4 8	5 0	3 9	5 3	4 2	7 0
,, Man. ,, ,,	3 1 8	8 9½	8 9½	6 5½	17 0	17 0	17 0	17 0	17 0	17 0	1 0 5½	17 0	3 8 4
Tops†	3 0 0	2 9 6	2 9 6	2 0 6	2 5 0	2 5 0	2 5 0	2 5 0	2 5 0	2 5 0	2 5 0	2 5 0	3 11 6
Total credits	6 5 6	3 3 3½	3 6 9½	2 12 5½	3 4 3	3 8 6	3 5 4	3 6 8	3 7 0	3 5 9	3 10 8½	3 6 2	7 4 10
Net cost	18 4 10½	20 10 10½	18 0 11½	16 9 6	16 0 1½	14 15 9½	14 17 5½	16 14 2½	16 10 4½	16 1 10½	15 14 1	16 11 11½	16 18 8½
Net Profit	6 10 4½	8 3 0	5 17 9½	1 8½	4 18 5	6 2 9½	6 1 1½	4 4 4½	4 8 2	4 16 8½	5 4 5½	4 6 7½	9 13 10½
Net Loss	—	—	—	—	—	—	—	—	—	—	—	—	—

* *Vide* Appendix C. † *Vide* Appendix D.

Field Costs and Returns Per Acre—*continued.*

Field Number	117	118	119	120	121	122	123	124	125	126	127	129	130
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	14 1½	17 2½	8 0½	15 9½	1 7 0½	2 14 1	2 2 4	2 11 4½	2 19 5	10 5½	1 14 6	1 19 9½	3 6 0½
Sub-soiling	—	—	—	—	—	—	1 1 2	1 5 8½	—	—	—	—	—
Cultivating	—	—	—	—	6 10	—	—	—	13 2½	6 9½	—	—	—
Steam tackle	—	—	—	—	—	—	—	—	—	1 15 6	—	—	—
Harrowing	9 0½	6 1½	5 1½	9 4½	5 6½	7 4½	5 9½	7 0	12 8½	7 11½	12 1½	13 0½	10 6½
Rolling	7 7½	5 10½	6 0½	8 6	6 5½	6 5½	5 0½	6 1½	10 10½	13 2½	8 1½	9 7½	7 4
Other work	3 9½	3 9	3 2½	4 7½	—	—	—	—	4 5½	—	—	—	—
Preliminary cultivations	1 14 6½	1 12 11½	1 2 5½	1 18 4	2 5 10½	3 7 11	3 14 3½	4 10 2½	4 16 4½	3 18 4½	3 1 6½	3 2 5	4 5 11
Seed	8 9	8 9	8 9	8 9	8 9	8 9	8 9	8 9	10 10½	10 6	9 4	10 6	10 6
Drilling	2 6½	2 5½	1 7½	2 4	2 7	2 7	2 0½	2 5½	2 10	1 1	2 1½	1 11	1 11
Bunching, singling and hand hoeing	3 10 0	3 10 0	3 10 0	3 10 0	3 10 0	3 10 0	2 14 9½	3 6 6	5 8 5½	3 3 6	3 18 10½	1 7 7½	1 3 0
Horse hoeing	—	—	—	—	2 5½	2 5½	1 11½	2 3½	19 9½	15 6½	19 0	16 2½	1 4 11
Other work	—	—	—	—	—	—	—	—	—	—	—	—	—
Seed, drilling and after cultivations	4 1 3½	4 1 2½	4 0 4½	4 1 1	4 3 9½	4 3 9½	3 7 6½	4 0 0½	7 1 11½	4 10 7½	5 9 4½	2 16 3	3 5 4
Applying manures	1 1½	1 2½	16 2	1 7½	19 1	2 7	1 0 5½	2 5½	1 3 10½	2 6½	1 9½	19 1	1 6 3
Artificials*	1 4 6	1 4 6	1 5 5	1 4 6	2 9 6	1 4 6	19 2	1 3 3½	3 18 0½	3 4 0	3 14 8	4 4 4½	1 12 7½
Dung*	—	—	3 15 0	—	1 16 2	—	2 12 10	—	‡4 4 5½	—	—	2 2 4	4 13 9
Total manures	1 5 7½	1 5 8½	5 16 7	1 6 1½	5 4 9	1 7 1	4 12 5½	1 5 8½	9 6 4½	3 6 6½	3 16 5½	7 5 9½	7 12 7½
Lifting	9 1½	9 4½	9 6½	9 7½	9 3	10 2½	9 10½	7 2½	1 0 10½	15 4	17 10½	4 9	5 2 5
Pull, top and lumping	3 0 0	3 0 0	3 0 0	3 0 0	3 0 0	3 0 0	3 0 0	3 0 0	6 6 8½	3 10 0	3 10 0	4 5 1½	
Loading and haulage†	1 10 0	1 10 0	1 10 0	1 10 0	1 5 0	1 5 0	1 5 0	1 5 0	1 17 8	1 14 6	2 18 9½		
Total harvesting	4 19 1½	4 19 4½	4 19 6½	4 19 7½	4 14 3	4 15 2½	4 14 10½	4 12 2½	9 5 3	5 19 10	7 6 8	4 9 10½	5 2 5
Rent	2 10 0	2 10 0	2 10 0	2 10 0	2 0 0	2 0 0	2 0 0	2 0 0	1 2 5½	1 10 0	1 10 0	1 10 0	1 10 0
Rates	15 4	15 4	15 4	15 4	15 4	15 4	15 4	15 4	4 8½	4 5½	4 5½	4 6	4 6
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	4 5 4	4 5 4	4 5 4	4 5 4	3 15 4	3 15 4	3 15 4	3 15 4	2 7 1½	2 14 5½	2 14 5½	2 14 6	2 14 6
Farm cash cost	16 5 11½	16 4 7½	20 4 3½	16 10 6½	20 4 0	17 9 3½	20 4 5½	18 3 6	32 17 1½	20 9 10½	22 8 5½	20 8 10½	23 0 9½
Transport and Grower's Representative	1 13 3	1 13 2½	1 13 3½	1 13 3½	3 18 9½	3 18 8	3 18 10½	3 18 8	2 9 10½	16 5½	1 13 0½	2 7 11½	1 12 5
Total cash cost	17 19 2½	17 17 10½	21 17 6½	18 3 10	24 2 9½	21 7 11½	24 3 4	22 2 2	35 7 0	21 6 4½	24 1 5½	22 16 9½	24 13 2½
Gross cash receipts	26 12 6½	26 12 6½	26 12 6½	26 12 6½	26 12 6½	26 12 6½	26 12 6½	26 12 6½	28 14 0	7 15 3½	18 5 5½	27 16 8½	19 19 5½
Cash Profit	8 13 4	8 14 8½	4 15 0	8 8 8½	2 9 9	5 4 6½	2 9 2½	4 10 4½	—	—	—	4 19 11	—
Cash Loss	—	—	—	—	—	—	—	—	6 13 0	13 11 0½	5 16 0½	—	4 13 8½
Residual values bt. fwd.	6 0	6 0	1 0 0	6 0	6 0	6 0	6 0	10 0	12 6	5 0	15 0	16 0	15 0
Gross cost	18 5 2½	18 3 10½	22 17 6½	18 9 10	24 8 9½	21 13 11½	24 9 4	22 12 2	35 19 6	21 11 4½	24 16 5½	23 12 9½	25 8 2½
Resid. Cult. values cd. fwd.	9 6	8 6	7 6	9 0	10 0	9 0	18 8	1 2 2	18 9	1 11 5	16 3	12 2	18 9
„ Man. „ „	13 10	13 10	13 10	2 12 9	13 10	1 17 2½	13 1½	2 13 5½	16 0	18 8	2 5 11	2 11 10½
Tops†	3 11 6	2 9 6	2 11 9½	3 11 6	2 9 6	2 9 6	2 9 6	2 9 6	3 18 0	1 2 0	3 0 0	3 6 0	2 15 0
Total credits	4 14 10	3 11 10	5 8 9½	4 14 4	5 12 3	3 12 4	5 5 4½	4 4 9½	7 10 2½	3 9 5	4 14 11	6 4 1	6 5 7½
Net cost	13 10 4½	14 12 0½	17 8 9	13 15 6	18 16 6½	18 1 7½	19 3 11½	18 7 4½	28 9 3½	18 1 11½	20 1 6½	17 8 8½	19 2 6½
Net Profit	13 2 2	12 0 6½	9 3 9½	12 17 0½	7 16 0	8 10 10½	7 8 7½	8 5 2½	4 8½	10 6 7½	1 16 1½	10 8 0	16 10½
Net Loss	—	—	—	—	—	—	—	—	—	—	—	—	—

* *Vide* Appendix C. † *Vide* Appendix D. ‡ Includes Sludge.

Field Costs and Returns Per Acre—*continued.*

Field Number	131	132	133	134	135	136	137	139	140	141	142	143	144
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	1 15 9½	1 13 0	1 13 9½	18 10	1 4 3½	1 16 7½	1 7 8½	1 11 5	1 18 11	1 2 11	2 6 7½	2 0 1½	16 8½
Sub-soiling	—	9 2	—	—	—	—	—	—	—	—	—	—	—
Cultivating	13 6½	—	7 11½	—	3 1	—	—	4 1½	—	1 8½	2 5½	2 7	3 7½
Steam tackle	—	—	—	—	—	—	—	—	—	—	—	—	—
Harrowing	3 10	7 4	2 2½	1 4	3 3½	5 3½	1 5½	3 10	10 0	4 1½	4 5½	2 5½	3 1
Rolling	8 7½	3 1	5 5½	—	2 2½	2 0	2 0½	3 1	5 2	5 8½	5 1	2 5½	2 3½
Other work	—	—	—	—	—	—	—	—	—	—	—	—	—
Preliminary cultivations	3 1 9½	2 12 7	2 9 5½	1 0 2	1 12 10½	2 3 11	1 11 2½	2 2 5½	2 14 1	1 14 5½	2 18 7½	2 7 7½	1 5 8
Seed	7 0	8 9	8 9	8 9	8 9	8 9	8 9	8 9	8 9	8 9	8 9	7 8	5 10
Drilling	5 2½	2 6	2 7½	1 6¾	1 2	2 0	1 9¾	2 4	2 11¾	2 2	1 11	1 8	2 3
Bunching, singling and hand hoeing	3 2 8	2 19 10¾	—	2 10 0	2 10 0	2 10 0	2 10 0	3 2 4¾	2 3 8¾	1 12 6	1 12 6	1 16 11	2 0 6½
Horse hoeing	4 4	3 10	—	11 9	12 5½	19 9¾	16 3½	1 0 2½	14 1	16 0½	1 0 7	13 9	11 5
Other work	—	—	—	—	—	—	—	—	1 3	—	—	—	—
Seed, drilling and after cultivations	3 19 2½	3 14 11¾	—	3 12 0¾	3 12 4½	4 0 6¾	3 16 10	4 13 8½	3 10 9½	2 19 5½	3 3 9	3 0 0	3 0 0½
Applying manures	6 2½	1 16 0½	3 9	3 1½	2 3¾	6 5	7 9½	—	2 1 6½	—	—	1 0 7½	11
Artificials*	3 1 4½	2 15 10½	3 3 4	9 7¾	9 7¾	9 7½	1 16 8½	—	2 5 10	—	—	1 2 0½	15 6½
Dung*	—	3 15 0	—	—	7 0½	‡11 8½	—	—	3 15 0	—	§2 0 0	3 17 9	—
Total manures	3 7 7	8 6 11	3 7 1	12 8¾	11 11	1 3 0½	2 16 2½	—	8 2 4½	—	2 0 0	6 0 5	16 5½
Lifting	} 8 2 10½	} 2 16 7½	—	} 2 5 0	} 2 5 0	} 2 5 0	} 2 5 0	} 1 19 0½	} 2 0 0	} 2 0 0	} 2 0 0	9 11	5 3½
Pull, top and lumping		—	—									2 0 0	2 0 6½
Loading and haulage†	3 14 11	1 16 7	—	12 2	13 0½	14 1½	13 9½	2 13 9¾	3 7 10¾	3 2 7	2 19 3½	1 18 0½	1 1 1
Total harvesting	11 17 9½	4 13 2½	—	2 17 2	2 18 0½	2 19 1½	2 18 9½	4 12 10	5 7 10¾	5 2 7	4 19 3½	4 7 11½	3 6 10½
Rent	} 15 0	10 0	1 0 0	12 11¾	12 11¾	12 11¾	12 11¾	1 5 0	1 5 0	1 5 0	1 5 0	1 0 0	1 5 0
Rates		2 9¼	4 0	1 4¼	1 4¼	1 4¼	1 4¼	7 3¼	7 3¼	7 3¼	7 3¼	3 6	4 2
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	1 15 0	1 12 9½	2 4 0	1 14 4	1 14 4	1 14 4	1 14 4½	2 12 3½	2 12 3½	2 12 3½	2 12 3½	2 3 6	2 9 2
Farm cash cost	24 1 4½	21 0 5½	—	9 16 5½	10 9 6¾	12 0 11¾	12 17 4½	14 1 2¾	22 7 5	12 8 9½	15 13 11	17 19 6	10 18 2¾
Transport and Grower's Representative	2 13 8½	4 0 4½	Crop failed and ploughed up.	1 2 10½	1 14 6½	1 14 10½	1 8 9½	1 14 6¾	1 19 7	2 12 1¾	2 10 1¾	2 5 1¾	1 15 1¼
Total cash cost	26 15 1	25 0 9¾		10 19 3¾	12 4 1	13 15 10¾	14 6 1¾	15 15 9¾	24 7 0	15 0 10¾	18 4 0¾	20 4 7¾	12 13 4
Gross cash receipts	25 0 10	21 12 0½		6 8 3½	12 6 7½	10 9 2½	9 15 6	17 9 2½	19 14 8	27 9 4½	25 0 11½	24 17 8½	21 19 6½
Cash {Profit	—	—		—	2 6½	—	—	1 13 4¾	—	12 8 5½	6 16 10¾	4 13 0½	9 6 2½
Cash {Loss	1 14 3	3 8 9½		4 11 0½	—	3 6 7¾	4 10 7¾	—	4 12 4	—	—	—	—
Residual values bt. fwd.	2 5 0	2 5 0		1 12 6	1 2 6	1 12 6	1 2 6	2 0 0	5 0	1 10 0	5 0	1 0 0	1 17 6
Gross cost	29 0 1	27 5 9¾		12 11 9¾	13 6 7	15 8 4½	15 8 7¾	17 15 9½	24 12 0	16 10 10¾	18 9 0¾	21 4 7¾	14 10 10
Resid. Cult. values cd. fwd.	7 3	9 0½		8 9	4 7½	14 10½	6 1½	17 2	10 6	12 0	15 5	10 3	8 6
„ Man. „ „	13 0½	2 9 3		4 9½	2 4	8 3¾	7 3	—	2 8 11½	—	—	2 5 4½	7 9
Tops†	3 0 6	2 9 6		16 6	16 6	16 6	16 6	3 7 6	1 13 0	2 19 6	3 7 6	3 6 0	3 7 6
Total credits	4 0 9½	5 7 9½		1 10 0½	1 3 5½	1 19 8½	1 9 10½	4 4 8	4 12 5½	3 11 6	4 2 11	6 1 7½	4 3 9
Net cost	24 19 3½	21 18 0½		11 1 9½	12 3 1½	13 8 8	13 18 9½	13 11 1½	19 19 6½	12 19 4¾	14 6 1¾	15 3 0½	10 7 1
Net {Profit	1 6½	—		—	3 5¾	—	—	3 18 0¾	—	14 9 11½	10 14 9¾	9 14 8	11 12 5½
Net {Loss	—	5 11¾		4 13 6	—	2 19 5½	4 3 3¾	—	4 10¾	—	—	—	—

* *Vide* Appendix C. † *Vide* Appendix D. ‡ Includes Sludge. § Sewage Treatment.

Field Costs and Returns Per Acre—*continued.*

Field Number	146	147	148	149	150	151	152	153	154	155	156	158	159‡
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	1 9 11½	1 3 10⅝	1 6 3½	14 6½	2 0 3	14 9½	2 15 3½	2 4 2½	2 6 5½	1 8 4	2 3 11	2 9 3½	2 8 11⅝
Sub-soiling	—	10 6	—	—	—	—	19 2	18 6½	—	—	—	—	—
Cultivating	—	15 3⅝	5 1½	3 9½	—	—	—	—	—	5 1⅝	7 6	4 6	5 7
Steam tackle	—	—	—	1 10 0	—	—	—	—	—	—	—	—	—
Harrowing	9 2	16 7½	4 9½	14 0½	18 2½	6 11½	7 11	10 2½	3 2½	2 8	3 5	3 4½	5 4
Rolling	4 2½	2 7½	4 10⅝	9 10	5 9	4 9½	6 6	1 11½	3 10⅝	4 11	5 10	11⅛	5 10
Other work	3 0	2 9⅝	—	3 0½	—	—	—	—	—	—	—	—	—
Preliminary cultivations	2 6 4	3 11 9½	2 1 0⅝	3 15 2½	3 4 2½	1 6 6½	4 8 10½	3 14 10½	2 13 6⅝	2 1 0⅝	3 0 8	2 18 1⅝	3 5 8⅝
Seed	6 9½	7 11½	8 2	9 9	6 8½	5 10	11 8	11 8	6 5	6 5	7 9½	7 0⅝	7 5
Drilling	2 10½	2 8½	1 5½	2 5½	1 11½	3 3½	3 3	4 3	1 9½	1 8	2 1	1 8	1 9⅛
Bunching, singling and hand hoeing	2 12 2½	2 12 0	—	5 6 3½	2 8 8	1 1 8	1 14 8	2 6 2½	2 8 4	1 13 8½	3 14 3½	2 16 1⅝	1 14 11
Horse hoeing	17 3	6 9½	—	6 11½	2 0½	7 6	5 0	11 8½	5 7½	6 2⅝	11 2	10 6½	17 11
Other work	—	9 0⅛	—	1 0 8½	2 4	2 5½	—	—	5 0	10 4½	1 1½	—	—
Seed, drilling and after cultivations	3 19 1⅝	3 18 5½	—	7 6 1⅝	3 8 8½	2 0 9	2 14 7	3 13 10	3 7 1½	2 18 4⅝	4 16 5½	3 14 11⅝	2 2 0⅝
Applying manures	7 4	7 2½	1 2 6½	1 2 4½	7 2½	3 9½	—	—	3 1⅝	1 0 9⅝	1 10 8½	2 11½	15 8⅝
Artificials*	3 14 7⅝	4 4 4	2 3 9	4 0 0	—	2 17 4	—	—	3 6 1	2 3 1½	1 6 1⅝	2 1 2½	2 4 9⅝
Dung*	—	—	2 5 0	3 15 0	1 17 6	—	—	—	—	2 10 0	5 17 10½	—	2 4 3⅝
Total manures	4 1 11⅝	4 11 6½	5 11 3½	8 17 4½	2 4 8½	3 1 1½	—	—	3 9 2⅝	5 13 11½	8 14 8½	2 4 1⅝	5 4 10
Lifting	5 2½	14 3⅝	—	15 0	} 2 10 0	} 2 2 6	3 8	} 2 6 10	11 9⅝	9 2⅝	13 7½	10 3½	12 5½
Pull, top and lumping	18 3½	1 14 6½	—	3 0 0			3 7 1		2 1 1½	2 5 7½	2 3 11	1 19 4½	2 16 0½
Loading and haulage†	1 2 8	1 17 11½	—	3 12 6½	18 9½	4 4	1 1 6½	1 3 4	1 8 8½	16 7	1 14 9	18 0	3 3 11½
Total harvesting	2 6 1½	4 6 9½	—	7 7 6½	3 8 9½	2 6 10	4 12 3½	3 10 2	4 1 7½	3 11 5½	4 13 3½	3 7 7½	6 13 2½
Rent	12 0	8 0	1 5 0	4 0 0	1 11 7	12 6	1 10 0	1 10 0	1 5 0	1 5 0	1 5 0	1 5 0	1 5 0
Rates	2 5	1 6	3 6	8 6	4 0	1 3	4 1	4 1	4 0	4 0	4 0	4 0	4 0
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	1 14 5	1 9 6	2 8 6	5 8 6	2 15 7	1 13 9	2 14 1	2 14 1	2 9 0	2 9 0	2 9 0	2 9 0	2 9 0
Farm cash cost	14 8 0	17 18 0½	—	32 14 9	15 1 11⅝	10 9 0	14 9 9⅜	18 12 11½	16 0 6½	16 13 10	23 13 1½	14 13 11	19 14 10
Transport and Grower's Representative	14 1½	1 5 6½		5 9 10½	5 9 3	2 1 2⅝	4 3 10	4 3 10	2 8 10½	1 7 5½	2 16 6⅝	1 12 11½	2 15 8½
Total cash cost	15 2 1½	19 3 7		38 4 7½	20 11 2⅝	12 10 2⅝	18 13 7½	17 16 9½	18 9 5	18 1 3½	26 9 8½	16 6 10½	22 10 6½
Gross cash receipts	7 3 2½	14 8 4½		37 1 2⅝	17 7 2½	10 18 3	17 9 3⅝	17 9 3⅝	16 19 3½	8 8 8	19 5 5½	14 9 10	16 2 0
Cash {Profit	—	—		—	—	—	—	—	—	—	—	—	—
Cash {Loss	7 18 10⅝	4 15 2⅝		1 3 4⅝	3 4 0½	1 11 11⅝	1 4 4	7 5⅝	1 10 1½	9 17 7½	7 4 2⅝	1 17 0½	6 8 6½
Residual values bt. fwd.	5 0	5 0		12 6	5 0	2 0 0	5 0	5 0	5 0	5 0	5 0	5 0	1 12 0
Gross cost	15 7 1½	19 8 7		38 17 1½	20 16 2⅝	14 10 2⅝	18 18 *7½	18 1 9½	18 14 5	20 6 3½	26 14 8½	16 11 10½	24 2 6½
Resid. Cult. values cd. fwd.	13 0	16 0		1 0 3	6 9	5 7½	16 7	1 1 1	4 3	6 8	11 10½	9 10½	15 6
„ Man. „ „	1 3 2	1 6 10½		3 4 2	18 9	11 0⅝	—	—	15 0	2 1 7½	3 2 2½	13 1	2 0 9½
Top†	1 0 6	1 17 6		3 6 0	2 12 0	1 2 0	2 9 6	2 19 6	1 18 6	1 18 6	1 18 6	1 18 6	1 18 6
Total credits	2 16 8	4 0 4½		7 10 5	3 17 6	1 18 8½	3 6 1	4 0 7	2 17 9	4 6 9½	5 12 7	3 1 5½	4 14 9½
Net cost	12 10 5½	15 8 2½		31 6 8½	16 18 8⅝	12 11 6½	15 12 6⅝	14 1 2½	15 16 8	15 19 6½	21 2 1½	13 10 5	19 7 8⅝
Net {Profit	—	—		5 14 6½	8 5⅝	—	1 16 9	3 8 1½	1 2 7½	—	—	19 5	—
Net {Loss	5 7 2⅝	19 10½		—	—	1 13 3½	—	—	—	7 15 10½	1 16 7⅝	—	3 5 8⅝

* *Vide* Appendix C. † *Vide* Appendix D. ‡ Of 11 acres drilled, 8½ acres failed and were ploughed up in June. All costs up to June calculated on 11 acres, after June on 2½ acres.

Field Costs and Returns Per Acre—*continued.*

Field Number	160	161	162	163	164	165	167	168	169	171	172	173	174
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	2 15 5½	2 11 11½	1 3 1½	2 8 8	16 9½	1 13 0	16 9½	1 1 0½	1 9 0½	3 4 10½	19 8½	1 1 4½	1 6 3½
Sub-soiling	—	—	12 1½	14 9½	—	15 4½	14 8	1 1 0½	—	—	—	—	—
Cultivating	3 5	6 1½	—	11 0½	—	13 9½	8 9½	10 10½	—	—	11 7½	8 5½	6 2½
Steam tackle	—	—	—	—	—	—	—	—	—	—	—	—	—
Harrowing	5 3½	2 9	5 8½	13 8½	4 8½	6 9½	3 11	5 0½	18 11½	15 1½	2 2½	4 0½	7 7
Rolling	4 1½	6 8½	1 8	6 4½	7 0½	6 1½	4 2	7 0	10 8½	4 1½	3 8	2 10	2 11½
Other work	—	—	—	—	—	—	—	—	1 1½	2 0		4½	—
Preliminary cultivations	3 8 3	3 7 7½	2 2 7½	4 14 7½	1 8 7	3 15 1½	2 8 3½	3 4 11	2 19 9	4 6 1½	1 17 6½	1 16 11½	2 3 1
Seed	6 5	6 6½	7 10½	8 10½	8 9	8 9	8 2	9 2	8 2	8 2	8 9	6 9½	10 0
Drilling	1 3	2 0	1 4	2 1½	2 2	1 8½	2 8½	2 1½	2 11	2 9½	1 5½	3 3½	2 11½
Bunching, singling and hand hoeing	4 11 2½	3 7 7½	3 16 2	4 9 8½	3 0 0	2 19 11½	4 2 9½	2 15 11½	4 2 1½	4 11 1	3 0 7	3 14 0	2 13 7
Horse hoeing	7 7½	13 11½	4 2½	13 6½	11 3½	10 8	9 1½	6 6½	2 11	3 1½	13 5	15 11½	13 1½
Other work	3 11½	—	—	—	—	—	—	1 8½	3 4	1 0	—	—	3 2½
Seed, drilling and after cultivations	5 10 6	4 10 1½	4 9 6½	5 14 8	4 2 2½	4 1 1½	5 2 9½	3 15 6½	4 19 5½	5 6 2½	4 4 2½	5 0 0½	4 2 11
Applying manures	18 3½	4 3½	18 10½	3 7½	2 4½	3 5½	4 11½	1 3 8½	1 10 5½	17 1½	10 10½	3 3	4 9½
Artificials*	1 7 0½	3 14 0½	4 7 11½	2 14 8½	3 11 7½	3 1 1½	3 2 7	2 14 1½	—	—	2 14 6½	3 1 0½	2 15 9½
Dung*	5 5 0	—	3 10 5	—	—	—	—	6 8 7	5 2 6	2 10 7½	1 12 1¾	—	—
Total manures	7 10 4½	3 18 4½	8 17 2½	2 18 3½	3 14 0½	3 4 7	3 7 6½	10 6 5½	6 12 11½	3 7 8½	4 17 7	3 4 3½	3 0 7½
Lifting	13 5½	9 11½	7 9½	} 3 13 1½	11 3½	9 2	} 2 3 4½	} 2 7 2½	} 2 13 4	} 3 0 0	} 2 10 0	8 9½	} 3 0 0
Pull, top and lumping	3 1 2	1 13 11½	3 19 5½		2 2 8	2 5 5½						3 10 7½	
Loading and haulage†	1 1 2½	1 1 2½	14 3½	7 3½	1 13 1½	2 15 0½	1 11 0½	2 3 3	1 14 6½	1 12 2½	2 3 8	1 15 6½	1 9 2½
Total harvesting	4 15 9½	3 5 2	5 1 6	4 0 5½	4 7 1½	5 9 8½	3 14 5½	4 10 5½	4 7 10½	4 12 2½	4 13 8	5 14 11	4 9 2½
Rent	1 5 0	1 5 0	1 0 0	1 5 0	1 4 0	1 4 0	1 4 0	1 4 0	2 5 0	2 5 0	1 10 0	1 9 9	1 0 0
Rates	4 0	4 0	3 3½	5 2½	5 8½	5 8½	5 8½	5 8½	7 5	7 5	5 4	6 0	4 7½
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	2 9 0	2 9 0	2 3 3½	2 10 2½	2 9 8½	2 9 8½	2 9 8½	2 9 8½	3 12 5	3 12 5	2 15 4	2 15 9	2 4 7½
Farm cash cost	23 18 11	17 10 3½	22 14 2½	19 17 10	16 1 7½	19 0 2½	17 2 9½	24 7 1	22 12 5½	21 4 7½	18 8 4½	18 11 11½	16 0 5½
Transport and Grower's Representative	3 4 2½	1 16 5½	2 5 5½	3 15 3	1 18 9½	2 8 4½	1 15 1½	2 6 5½	1 10 8½	1 7 11	3 8 11½	2 14 3½	4 6 11½
Total cash cost	26 18 1½	19 6 9	24 19 8	23 13 1	17 15 5½	21 8 7	18 17 10½	26 13 6½	24 3 2	22 12 6½	21 17 4	21 6 3	20 7 5
Gross cash receipts	23 14 5½	11 17 6½	30 9 11	26 10 0½	20 12 10½	29 9 1½	23 0 11½	29 12 8½	17 13 11½	20 5 4½	25 18 3½	26 6 6½	27 17 9½
Cash Profit	—	—	5 10 3	2 16 11½	2 17 5½	8 0 6½	4 3 1	2 19 2½	—	—	4 0 11½	5 0 3½	7 10 4½
Cash Loss	3 3 7½	7 9 2½	—	—	—	—	—	—	6 9 2½	2 7 2½	—	—	—
Residual values bt. fwd.	5 0	5 0	1 0 0	10 0	10 0	5 0	5 0	16 0	5 0	15 0	2 7 2	1 10 0	5 0
Gross cost	27 3 1½	19 11 9	25 19 8	24 3 1	18 5 5½	21 13 7	19 2 10½	27 9 6½	24 8 2	23 7 6½	24 4 6	22 16 3	20 12 5
Resid. Cult. values cd. fwd.	5 9	12 6	11 3	1 3 7	8 6	1 1 9	18 7	1 2 4	2 3	2 4	13 6	14 9	11 10½
„ Man. „ „	3 0 0	1 0 9	2 16 5½	17 8	6 9	11 7	9 9	3 13 10½	2 11 3	1 5 3½	1 4 6½	15 2½	10 8½
Tops†	1 18 6	1 18 6	2 4 0	2 4 0	3 7 6	3 7 6	3 7 6	2 19 6	1 18 6	2 12 0	3 15 0	2 19 6	2 15 0
Total credits	5 4 3	3 11 9	5 11 8½	4 5 3	4 2 9	5 0 10	4 15 10	7 15 8½	4 12 0	3 19 7½	5 13 0½	4 9 5½	3 17 7
Net cost	21 18 10½	16 0 0	20 7 11½	19 17 10	14 2 8½	16 12 9	14 7 0½	19 13 10½	19 16 2	19 7 11	18 11 5½	18 6 9½	16 14 10
Net Profit	1 15 7½		10 1 11½	6 12 2½	6 10 2½	12 16 4½	8 13 11	9 18 10½	—	17 5½	7 6 9½	7 19 8½	11 2 11½
Net Loss	—	4 2 5½	—	—	—	—	—	—	2 2 2½	—	—	—	—

* *Vide* Appendix C. † *Vide* Appendix D.

Field Costs and Returns Per Acre.—*continued.*

Field Number	175	176	178	179	180	181	182	184	185	186	187	188	189
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	14 6½	16 2½	1 4 6½	14 0½	1 3 0½	1 14 2½	2 1 5½	19 8	1 12 7	19 8	19 8	1 3 0	2 11 0½
Sub-soiling	—	—	—	—	—	17 1	—	—	—	—	—	—	—
Cultivating	—	—	2 9½	7 10½	3 5	6 4	10 3½	—	—	—	—	—	4 0½
Steam tackle	—	—	—	—	—	—	—	—	—	—	1 8 0	—	—
Harrowing	3 11½	5 0½	1 7½	1 9½	4 5½	6 4½	4 3½	5 10½	13 9½	12 9½	11 7½	1 10½	19 10½
Rolling	1 8	2 1½	4 7½	2 6½	5 5	6 1	—	11 5½	10 5½	11 10½	14 8	13 1½	6 10½
Other work	—	—	—	—	—	1 3	2½	—	—	—	—	1 12 7	3 8
Preliminary cultivations	1 0 2	1 3 4	1 13 6½	1 6 8½	1 16 4½	3 11 3½	2 16 3½	1 17 0	2 16 10½	2 4 3½	3 13 11½	3 10 7½	4 5 6½
Seed	7 0	6 5	7 8	7 8	7 8	7 7	7 7	8 9	8 9	8 9	8 9	11 8	5 7
Drilling	10	9½	2 4	2 2½	2 3	2 7	3 5½	2 4	3 11	3 10½	3 1	1 11½	3 1½
Bunching, singling and hand hoeing	1 16 9	1 19 5½	1 6 3½	2 2 6½	1 14 5	1 14 0	2 2 0½	2 6 7½	1 16 2½	2 6 1½	1 17 9½	1 12 0½	2 15 3½
Horse hoeing	8 4½	8 6	7 1½	14 4½	7 9½	7 9	15 1½	11 6	16 1	19 1½	12 5	14 4½	11 4
Other work	—	—	—	—	—	—	—	—	—	—	—	—	—
Seed, drilling and after cultivations	2 12 11½	2 15 1½	3 3 4½	3 6 9½	2 12 1½	2 11 11	3 8 2½	3 9 2½	3 3 11½	3 17 10½	3 2 0½	3 0 0	3 15 3½
Applying manures	4 9½	5 2	5 9	5 5½	5 2½	1 5 7	1 19 1½	3 10½	3 3½	4 9½	3 3½	1 5 6	1 18 5
Artificials*	3 0 9½	3 1 5½	1 2 8½	1 2 4	1 2 5	2 7 3	2 8 0½	4 5 0	2 7 7	2 7 6	2 7 5	2 5 8½	2 1 1
Dung*	—	—	—	—	—	‡3 9 10½	3 0 0			—	—	4 10 0	4 10 0
Total manures	3 5 1	3 6 7½	1 8 5½	1 7 9½	1 7 7½	7 2 8½	7 7 2½	4 8 10½	2 10 10½	2 12 3½	2 10 8½	8 1 2½	8 9 6
Lifting	8 11½	9 2	7 8½	8 6½	7 7½	7 2½	13 10½	11 0½	8 6½	10 10½	9 11	7 11	14 7
Pull, top and lumping	3 13 6½	3 18 8	1 8 6	1 8 3	1 9 6½	2 3 11	3 19 3½	2 15 7½	2 16 6	2 15 9½	2 13 3½	2 10 3	2 9 9
Loading and haulage†			1 9 0	1 8 0½	1 10 9½	1 19 10½	3 8 11	1 8 0½	1 18 6	2 1 3½	1 7 3½	15 5½	1 8 6½
Total harvesting	4 2 6	4 7 10	3 5 2½	3 4 10	3 7 11½	4 10 11½	8 3 0½	4 14 8½	5 3 6½	5 7 11½	4 10 6½	3 13 7½	4 12 10½
Rent	1 10 0	1 10 0	15 8½	15 8½	15 8½	1 10 0	1 10 0	2 0 0	2 0 0	2 0 0	2 0 0	1 4 0	1 4 0
Rates	4 0	4 0	4 7½	4 7½	4 7½	5 11½	5 11½	15 0	15 0	15 0	15 0	5 4	5 4
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	2 14 0	2 14 0	2 0 4½	2 0 4½	2 0 4½	2 15 11½	2 15 11½	3 15 0	3 15 0	3 15 0	3 15 0	2 9 4	2 9 4
Farm cash cost	13 14 8½	14 6 11½	11 10 11	11 6 0½	11 4 5	20 12 10½	24 9 8½	18 4 9½	17 10 3	17 17 5½	17 12 2½	20 14 9½	23 12 6½
Transport and Grower's Representative	3 1 5	2 12 5½	1 3 0½	1 3 0½	1 3 0½	1 1 1½	1 9 1½	1 13 9	1 13 9	1 13 9	1 13 9	2 4 1	3 3 6½
Total cash cost	16 16 1½	16 19 4½	12 13 11½	12 9 1½	12 7 5½	21 14 0½	25 18 10	19 18 6½	19 4 0	19 11 2½	19 5 11½	22 18 10½	26 16 1
Gross cash receipts	23 7 8½	20 9 5½	12 10 8½	12 10 8½	12 10 8½	16 16 9	20 19 11½	18 4 5	18 4 5	18 4 5	18 4 5	13 10 10½	22 16 7
Cash Profit	6 11 7	3 10 1	—	1 7½	3 2½	—	—	—	—	—	—	—	—
Cash Loss	—	—	3 3½	—	—	4 17 3½	4 18 10½	1 14 1½	19 7	1 6 9½	1 1 6½	9 8 0½	3 19 6
Residual values bt. fwd.	7 6	5 0	5 0	10 0	1 0 0	5 0	5 0	15 0	2 5 0	2 5 0	2 5 0	5 0	5 0
Gross cost	17 3 7½	17 4 4½	12 18 11½	12 19 1½	13 7 5½	21 19 0½	26 3 10	20 13 6½	21 9 0	21 16 2½	21 10 11½	23 3 10½	27 1 1
Resid. Cult. values cd. fwd.	6 3	6 4½	5 3	12 9	5 10	17 1	14 3	8 6½	12 0	14 4	18 3	10 9	14 4
,, Man. ,, ,,	12 10½	12 8½	13 0½	12 9½	12 10½	2 9 9	2 4 4½	1 6 1	1 6 1	1 6 1	1 6 1	2 13 5½	2 15 1½
Tops†	2 12 6	2 5 0	1 4 9	1 9 9	1 4 9	2 9 6	2 9 6	2 18 6	2 18 6	2 18 6	2 18 6	2 4 0	2 4 0
Total credits	3 11 7½	3 4 1½	2 3 0½	2 15 3½	2 3 5½	5 16 4	5 8 1½	4 13 1½	4 16 7	4 18 11	5 2 10	5 8 2½	5 13 5½
Net cost	13 12 0	14 0 8½	10 15 11	10 3 9½	11 4 0	16 2 8½	20 15 8½	16 0 4½	16 12 5	16 17 3½	16 8 1½	17 15 8½	21 7 7½
Net Profit	9 15 8½	6 9 2½	1 14 9½	2 6 10½	1 6 8½	14 0½	4 3½	2 4 0½	1 12 0	1 7 1½	1 16 3½	—	1 8 11½
Net Loss	—	—	—	—	—	—	—	—	—	—	—	4 4 10	—

* *Vide* Appendix C. † *Vide* Appendix D. ‡ Includes Sludge.

Field Costs and Returns Per Acre—*continued.*

Field Number	190	191	192	193	194	195	196	197	198	199
	£ s. d.	£ s. d.	£ s. d.	£ s. d	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ploughing	1 3 4½	1 7 6½	1 3 4½	18 5½	1 3 1½	19 0	18 8	1 11 3½	16 6	15 5½
Sub-soiling	—	—	1 2 11½	—	—	9 3½	—	—	—	—
Cultivating	4 0½	9 11⅓	6 1	12 4	11 7½	9 1½	7 5½	4 1	5 7½	8 6½
Steam tackle	—	—	—	—	—	—	—	—	—	—
Harrowing	—	1 8½	5 9½	3 9	8 1½	5 10½	5 9½	5 5½	6 10½	5 0½
Rolling	6 11½	7 3	9 5½	5 9½	8 10½	8 7½	5 5	6 2½	10 1½	5 4½
Other work	1 3	1 11½	—	—	—	—	—	—	—	1 9½
Preliminary cultivations	1 15 7½	2 8 5½	3 7 8	2 0 3½	2 6 8½	2 6 11⅓	1 17 3½	2 7 0½	1 19 1½	1 16 3
Seed	8 2	7 3½	11 8	11 8	10 6	11 8	8 2	10 6	10 6	11 8
Drilling	1 6½	2 6	1 4½	1 3	1 6½	1 6½	3 5	4 4½	5 10	1 7½
Bunching, singling and hand hoeing	2 12 0	2 0 0	2 5 10½	2 1 2	1 13 8	1 13 11½	2 8 9	2 13 5	2 19 8	4 14 6
Horse hoeing	13 10½	16 0½	12 2½	9 10	8 2½	7 11⅓	13 6½	11 9½	7 9½	9 1
Other work	2 3	—	—	—	—	—	—	—	—	—
Seed, drilling and after cultivations	3 17 10	3 5 10½	3 11 1½	3 3 11	2 13 11⅓	2 15 1½	3 13 10½	4 0 0½	4 3 9½	3 16 10½
Applying manures	1 6½	2 2	4 2	2 8½	3 3	3 8	1 4 11	1 14 8½	1 6 6	1 2½
Artificials*	1 1 10½	16 2½	5 6 6½	5 12 11	5 2 10½	4 18 9½	2 7 6	17 0	17 0	1 4 7
Dung*	—	—	—	—	—	—	5 10 6½	3 15 0	3 0 0	—
Total manures	1 3 5	18 4½	5 10 8½	5 15 7½	5 6 1½	5 2 5½	9 2 11½	6 6 8½	5 3 6	1 5 9½
Lifting	8 2½	?	?	?	?	?	12 9	8 5½	12 10	11 8½
Pull, top and lumping	2 5 0	?	?	?	?	?	2 11 7½	4 13 8	3 17 6½	4 0 0
Loading and haulage†	1 6 0½	?	?	?	?	?	2 5 4½	1 4 11½	1 10 6	1 14 10½
Total harvesting	3 19 3	?	?	?	?	?	5 9 9½	6 7 1½	6 0 10½	6 6 7
Rent	2 0 0	2 0 0	1 10 0	1 10 0	1 10 0	1 10 0	1 5 6	1 10 0	1 10 0	4 0 0
Rates	12 6	12 6	5 0	5 0	5 0	5 0	4 10	3 4½	3 4½	8 6
Establishment	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
Total overheads	3 12 6	3 12 6	2 15 0	2 15 0	2 15 0	2 15 0	2 10 4	2 13 4½	2 13 4½	5 8 6
Farm cash cost	14 8 7½	?	?	?	?	?	22 14 2½	21 14 3½	20 0 8½	20 14 0½
Transport and Grower's Representative	2 7 11	Costs incomplete					1 16 1½	1 17 6	1 17 6	1 10 6½
Total cash cost	16 16 6½						24 10 4½	23 11 9½	21 18 2½	22 4 6½
Gross cash receipts	27 10 4						26 12 1½	15 10 5½	15 10 5½	23 18 7½
Cash Profit	10 13 9½						2 1 9½	—	—	1 14 1½
Cash Loss	—						—	8 1 3½	6 7 9½	—
Residual values bt. fwd.	2 5 0						5 0	5 0	5 0	5 0
Gross cost	19 1 6½						24 15 4½	23 16 9½	22 3 2½	22 9 6½
Resid. Cult. values cd. fwd.	12 4½						12 1½	8 9½	7 10½	10 3½
„ Man. „ „	10 2½						3 5 11½	2 1 9	1 14 3	—
Tops†	2 14 0						2 2 9	3 0 0	3 0 0	3 17 0
Total credits	3 16 6½						6 0 10	5 10 6½	5 2 1½	4 7 3½
Net cost	15 5 0						18 14 6½	18 6 3	17 1 1½	18 2 3
Net Profit	12 5 4						7 17 7½	—	—	5 16 4½
Net Loss	—						—	2 15 9½	1 10 7½	—

* *Vide* Appendix C. † *Vide* Appendix D.

APPENDIX F.

FIELD COSTS AND RETURNS PER WASHED TON.

Field Number	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	12 7½	8 2	5 7	6 1	7 1½	7 7½	2 5	14 4½	10 8½	6 0½	6 0½	3 3	7 4½	4 9	17 1½
Seed, drilling and after cultivations	10 4	7 2½	7 11½	8 8½	9 2½	10 7	5 2½	5 5½	7 9½	5 9	7 5	7 8	19 11½	8 1½	17 7
Manures	8 1	8 6½	11 0½	19 2	1 1 11½	7 10½	4 6½	—	—	4 9½	9 1½	7 10½	1 1 3	17 4½	1 9 5½
Harvesting	14 7	7 6½	7 7½	7 10½	6 11½	8 4½	7 6½	8 9½	7 11	8 3½	14 1	11 3½	15 7½	10 8	17 5½
Overheads	7 2½	5 11½	5 11½	5 11½	5 11½	5 11½	5 11½	6 2½	6 2	5 0	6 3	5 2	6 7½	3 10½	7 4½
Farm cash cost	2 12 10	1 17 5½	1 18 1½	2 7 10½	2 11 2½	2 0 4½	1 5 8½	1 14 9½	1 12 7	1 9 11	2 2 11½	1 15 3	3 10 10½	2 4 9½	4 9 0
Transport and Grower's rep'ntative	4 1	3 11½	3 11½	3 11½	3 11½	3 11½	3 11½	3 6½	3 7½	3 5½	6 11½	5 10½	4 7½	5 0½	5 3
Total cash cost	2 16 11	2 1 5½	2 2 1	2 11 9½	2 15 2	2 4 4½	1 9 7½	1 18 4	1 16 2½	1 13 4½	2 9 11	2 1 1½	3 15 5½	2 9 10½	4 14 3
Gross cash receipts	2 16 1½	2 17 6½	2 17 6½	2 17 6½	2 17 6½	2 17 6½	2 17 6½	2 17 8½	2 11 10	2 19 4½	2 16 5	2 16 8½	2 18 10½	2 16 4	2 14 2½
Cash {Profit	—	16 1	15 5½	5 8½	2 4½	13 2	1 7 10½	19 4½	15 7½	1 6 0	6 6	15 7	—	6 5½	—
Cash {Loss	9½	—	—	—	—	—	—	—	—	—	—	—	16 7	—	2 0 0½
Resid. Vals. bt. fwd.	2 5½	3 1½	1 3½	7½	1 3½	3 1½	5 2½	3 5	3 5	1 1½	7½	6½	10 2	5 11½	1 1½
Gross cost	2 19 4½	2 4 6½	2 8 4½	2 12 5½	2 16 5½	2 7 5½	1 14 10½	2 1 9	1 19 7½	1 14 6	2 10 6½	2 1 8½	4 5 7½	2 15 9½	4 15 4½
Total credits	17 9	15 7½	11 10	13 11½	16 3½	13 9	7 10½	10 5½	10 10½	9 2½	13 8½	13 0½	13 1½	13 5½	19 6½
Net cost	2 1 7½	1 8 11	1 11 6½	1 18 5½	2 0 2½	1 13 8½	1 7 0	1 11 4	1 8 8½	1 5 3½	1 16 10½	1 8 8	3 12 6½	2 2 4½	3 15 10
Net {Profit	14 6½	1 8 7½	1 5 11½	19 0½	17 4	1 3 9½	1 10 6½	1 6 4½	1 3 1½	1 14 0½	19 6½	1 8 0½	—	13 11½	—
Net {Loss	—	—	—	—	—	—	—	—	—	—	—	—	13 7½	—	1 1 7½

Field Number	17	18	22	23	24	25	26	27	28	29	30	31	32	33	34
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	9 6	6 0	6 10½	5 5½	4 4	4 5½	4 9½	4 5	7 6½	3 4½	2 11½	3 10½	15 5½	6 10½	4 5½
Seed, drilling and after cultivations	9 8½	6 3½	10 0	7 4½	8 3½	11 9	5 5½	6 2½	7 11½	7 6	6 7½	9 5½	1 2 9½	12 2	7 10½
Manures	1 7 3	1 1 8½	3 9½	6 4½	10 3½	10 2½	17 6½	7 3½	16 9	6 6½	5 10½	1 3 11	2 2 0½	5 0½	1 0 0½
Harvesting	10 10½	8 4½	10 10½	13 7½	14 9	12 7½	7 8	8 2½	9 3½	11 10	11 10½	18 11	1 10 8½	19 3½	12 1½
Overheads	7 4	5 5	3 10	3 10	3 10	3 10	4 1½	4 2	6 4½	6 10½	5 8½	8 3½	13 3½	7 2½	5 0½
Farm cash cost	3 4 8½	2 7 9½	1 15 4½	1 16 9	2 1 5½	2 2 10½	1 19 7	1 10 8½	2 7 10½	1 16 1½	1 13 1	3 4 5½	6 4 2½	2 10 7	2 9 6
Transport and Grower's rep'ntative	7 5½	7 6	4 11½	4 11½	4 11½	4 11½	7 7½	6 8½	8 2½	6 11½	7 11	7 3½	8 11½	7 4½	3 4
Total cash cost	3 12 1½	2 15 3½	2 0 4½	2 1 8½	2 6 5½	2 7 9½	2 7 2½	1 17 0	2 16 1½	2 3 1½	2 1 0	3 11 9½	6 13 2½	2 17 11½	2 12 10
Gross cash receipts	3 0 4	3 0 2½	2 14 2½	2 14 2½	2 14 2½	2 14 2½	2 14 7½	2 18 1½	2 16 7½	2 17 1½	2 17 10½	2 18 7½	2 15 9½	2 12 9½	2 13 10½
Cash {Profit	—	4 10½	13 10½	12 6½	7 9½	6 5	7 4½	1 1 1½	6	14 0	16 10½	—	—	—	1 0½
Cash {Loss	11 9½	—	—	—	—	—	—	—	—	—	—	13 2	3 17 5	5 2	—
Resid. Vals. bt. fwd.	1 0½	9½	5½	3 10½	1 8½	10½	5½	6 11	7	2 0	6½	1 2½	1 6½	8 4	3 9½
Gross cost	3 13 2½	2 16 0½	2 0 9½	2 5 7	2 8 2	2 8 8½	2 7 8½	1 17 5½	2 16 8½	2 5 1½	2 1 6½	3 12 11½	6 14 8½	3 6 3½	2 16 7½
Total credits	1 0 2	16 9	7 1	10 3	9 2½	9 7½	11 8	6 11	11 10½	10 4	11 6½	1 0 3½	1 8 4	13 5	15 10
Net cost	2 13 0½	1 19 3½	1 13 8½	1 15 4	1 18 11½	1 19 1	1 16 0½	1 10 6½	2 4 10	1 14 9½	1 9 11½	2 12 8	5 6 4½	2 12 10½	2 0 9½
Net {Profit	7 3½	1 0 10½	1 0 6½	18 10½	15 3½	15 1½	18 7	1 7 7	11 9½	1 2 4	1 7 10½	5 11½	—	—	18 1½
Net {Loss	—	—	—	—	—	—	—	—	—	—	—	—	2 10 7½	1	—

Field Costs and Returns Per Washed Ton—*continued.*

Field Number	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	4 11½	8 9	5 6½	6 7½	6 2½	14 4	16 2½	3 0¾	10 6¾	5 7½	6 9	7 11½	7 1½	4 8½	7 11
Seed, drilling and after cultivations	7 2½	9 1½	7 4	11 0¾	19 2½	8 7½	16 10½	7 4¾	10 1	7 9¾	9 2	7 7½	12 5½	9 0¼	5 11½
Manures	1 5 7½	1 3 5½	1 0 4½	4 11½	1 6 9½	1 11 1½	1 8 0½	7 5	8 10¾	8 1	1 3 10½	7 5	10 10½	11 6¾	15 2½
Harvesting	17 8½	10 3½	10 8½	16 5	18 1½	18 9½	12 4½	9 9¾	8 10½	12 6	14 2½	12 6½	12 6½	12 6½	9 11
Overheads	6 6	5 7	5 11½	7 7½	13 5	9 7½	10 9½	6 0½	8 2½	6 2	7 4	8 2½	8 2½	8 2½	8 5½
Farm cash cost	3 2 0½	2 17 2½	2 10 0	2 6 9	4 3 8½	4 2 6½	4 4 3	1 13 8¾	2 6 7½	2 0 2½	3 1 3¾	2 3 9	2 11 2½	2 6 0½	2 7 5½
Transport and Grower's rep'ntative	8 1	4 7	7 3½	9 0½	8 4	9 4½	8 4¾	2 5	5 9	5 8½	5 10½	8 8	8 8	8 8	4 10
Total cash cost	3 10 1½	3 1 9½	2 17 3¾	2 15 9½	4 12 0½	4 11 10¾	4 12 7¾	1 16 1¾	2 12 4½	2 5 10¾	3 7 2	2 12 5	2 19 10½	2 14 8½	2 12 3½
Gross cash receipts..	2 16 11½	2 16 11½	2 16 10½	2 14 6½	2 16 11¼	2 16 10½	2 17 5½	2 11 2¾	2 13 9¾	2 14 5	2 16 1¾	2 16 9½	2 16 9	2 16 9	2 14 9
Cash {Profit	—	—	—	—	—	—	—	15 1	1 5½	8 6½	—	4 4¼	—	2 0¾	2 5¾
Cash {Loss	13 2	4 9¾	4¾	1 3	1 15 1½	1 15 0½	1 15 2½	—	—	—	11 0¼	—	3 1½	—	—
Resid. Vals. bt. fwd.	2 9	7	6¾	5 7	9 3½	1 2¾	1 0¾	1 7¾	8¾	1 8½	8½	1 1½	1 1½	1 1½	8¾
Gross cost	3 12 10½	3 2 4½	2 17 10	3 1 4½	5 1 3¾	4 13 1½	4 13 8½	1 17 9½	2 13 1½	2 7 7	3 7 10½	2 13 6½	3 0 11¾	2 15 9½	2 13 0
Total credits	18 2½	15 11	17 2	10 3	13 1½	1 3 3½	1 3 1	12 1¾	16 3½	14 9	19 8¾	9 6½	9 11	10 0½	12 5¾
Net cost	2 14 8½	2 6 5½	2 0 8	2 11 1½	4 8 2¾	3 9 10½	3 10 7½	1 5 7¾	1 16 9¾	1 12 10	2 8 1¾	2 4 0	2 11 0¾	2 5 9	2 0 6¾
Net {Profit	2 3½	10 6½	16 2½	3 5	—	—	—	1 5 7	17 0	1 1 7	8 0	12 9½	5 8½	11 0	14 2¾
Net {Loss	—	—	—	—	1 11 3	13 0	13 2½	—	—	—	—	—	—	—	—

Field Number	50	51	52	53	55	56	57	59	61	62	63	64	65	66	67
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	8 11	1 14 10	1 4 2	8 6	10 0½	9 10½	10 4½	3 8	4 7¾	7 11¾	4 4½	3 7½	5 10½	5 7½	6 2¾
Seed, drilling and after cultivations	10 6	1 1 9½	1 12 11½	10 3½	11 10½	10 0¾	11 3½	11 5¾	4 11	10 0½	9 9½	8 4½	12 5	12 3	15 6
Manures	11 8¾	19 2½	1 7½	18 4	14 0½	16 2½	9 1¾	8 3	12 3½	9 0¾	10 2	13 11½	9 1¾	9 7¾	1 12 11½
Harvesting	13 7	2 0 0½	1 14 1½	12 8½	11 3¾	14 11	11 1¾	16 6¾	13 6½	14 5¾	1 3 0	15 3	1 1 11½	1 2 7	
Overheads	7 7¾	10 5¾	11 5¾	5 10½	8 1	8 1	8 1	8 7	4 0½	5 4	5 1¾	6 7½	6 3¾	5 9	5 2½
Farm cash cost	2 12 4½	6 6 4	5 4 4	2 15 8	2 15 3¾	2 19 1½	2 10 0¾	2 8 6½	1 19 4¾	2 11 11¾	2 3 11¾	2 15 6¾	2 8 11¾	2 15 2½	4 2 5½
Transport and Grower's rep'ntative	4 9¾	10 10½	17 8½	9 6½	5 2¾	5 2¾	5 2¾	6 7¾	5 5½	5 6¼	5 1½	5 8¾	5 1¼	5 6¾	8 0¾
Total cash cost	2 17 2½	6 17 2½	6 2 0½	3 5 2½	3 0 6½	3 4 4	2 15 3	2 15 2½	2 4 10½	2 17 6	2 9 1	3 1 3½	2 14 1	3 0 9½	4 10 6
Gross cash receipts	2 17 11½	2 11 2	2 14 6½	2 15 10½	2 16 3½	2 16 3½	2 16 3½	2 16 1½	2 16 4½	2 17 2¾	2 18 6¾	2 15 5¾	2 19 11½	2 15 11¾	2 15 10½
Cash {Profit	9	—	—	—	—	—	1 0½	11	11 6	—	9 6½	—	5 10½	—	—
Cash {Loss	—	4 6 0½	3 7 6	9 3¾	4 3	8 0½	—	—	—	3½	—	5 9¾	—	4 9½	1 14 7½
Resid. Vals. bt. fwd.	8	9 0½	6 4½	7 9½	7¾	7¾	2 7	4 10¾	5	6½	1 0½	4 0½	1 3½	10½	11¾
Gross cost	2 17 10½	7 6 2½	6 8 5	3 12 11½	3 1 2½	3 4 11½	2 17 10	3 0 1	2 5 3½	2 18 0½	2 10 1½	3 5 4	2 15 4½	3 1 7½	4 11 5½
Total credits..	12 0½	1 3 1½	10 7	14 7½	14 1½	15 2¾	11 3	9 8¾	9 3¾	8 1	9 1½	10 1	9 5½	10 9½	1 1 9½
Net cost	2 5 9¾	6 3 0¾	5 17 10	2 18 4	2 7 1	2 9 9	2 6 7	2 10 4½	1 15 11½	2 9 11½	2 1 0	2 15 3	2 5 10¾	2 10 10½	3 9 8½
Net {Profit	12 1½	—	—	—	9 2½	6 6½	9 8½	5 9	1 0 4¾	7 3½	17 6¾	2¾	14 0¾	5 1½	—
Net {Loss	—	3 11 10¾	3 3 3½	2 5½	—	—	—	—	—	—	—	—	—	—	13 10

Field Costs and Returns Per Washed Ton—*continued.*

Field Number	68	69	70	71	72	73	74	75	76	77	78	82	83	84	85
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	4 7½	2 10	13 1½	7 8	10 0½	4 11½	3 9½	5 10½	8 4	7 0½	6 5½	3 8½	7 6½	8 4½	6 9
Seed, drilling and after cultivations	13 7	7 10½	9 7	7 8½	11 1	10 3	9 10	9 1½	8 10½	9 6½	12 10½	6 1	10 8½	8 5½	10 3½
Manures	9 5½	14 3½	1 11 6½	18 4½	12 11½	16 1½	3 8½	3 10½	8 6½	11 2½	1 2 7½	4 0½	1 0 6	3 1½	13 9½
Harvesting	16 11½	12 3½	1 1 10½	14 7½	14 6½	9 5½	18 1	13 3½	14 0	14 9½	9 2½	17 1	12 4	5 3½	11 4½
Overheads	8 9	7 11½	5 6½	3 5	6 1½	6 1½	6 1½	8 4½	5 5½	3 6½	7 1	8 9½	5 10½	5 7½	6 4½
Farm cash cost	2 13 3½	2 5 2½	4 1 8½	2 11 9½	2 14 9½	2 6 11	2 1 6½	2 0 6	2 5 2	2 6 1½	2 18 3½	1 19 8½	2 16 10½	1 10 10½	2 8 7
Transport and Grower's rep'ntative	5 8½	5 9½	5 9½	5 1	5 8½	5 8½	5 8½	3 8½	4 8½	5 5½	8 5½	8 1½	2 6½	6 4½	5 10½
Total cash cost	2 19 0½	2 10 11½	4 7 5½	2 16 10½	3 0 5½	2 12 7½	2 7 3	2 4 2½	2 9 10½	2 14 6½	3 6 5	2 2 3	3 3 3½	1 16 9½	2 14 5½
Gross cash receipts	2 16 10½	2 19 9½	2 14 7½	2 15 0	2 18 2½	2 18 2½	2 18 2½	2 5 8½	2 18 2	2 17 8½	2 14 8½	2 11 6	2 14 0	2 15 6½	2 17 9½
Cash {Profit	—	8 9½	—	—	—	5 7	10 11½	1 6	8 3½	3 1½	—	9 3	—	18 9½	3 3½
Cash {Loss	2 1½	—	1 12 10½	1 10½	2 3½	—	—	—	—	—	11 8½	—	9 3½	—	—
Resid. Vals. bt. fwd.	1 1	5 8½	1 6½	11½	1 9½	6½	2 3	5 3½	6½	7	3 3½	1 10½	7½	1 2½	4 6½
Gross cost	3 0 1½	2 16 8½	4 9 0	2 17 10	3 2 3½	2 13 2	2 9 6	2 9 6½	2 10 5½	2 15 1½	3 9 8½	2 4 1½	3 3 10½	1 18 0	2 19 0½
Total credits	12 7½	12 6	1 4 3½	16 11½	15 1½	14 3½	10 1	11 6½	11 10½	11 5½	1 3 4	6 6½	12 8½	8 9½	17 8½
Net cost	2 7 6	2 4 2½	3 4 8½	2 0 10½	2 7 2	1 18 10½	1 19 5	1 18 0	1 18 6½	2 3 8	2 6 4½	1 17 7	2 11 1½	1 9 2½	2 1 4½
Net {Profit	9 4½	15 6½	—	14 1½	11 0½	19 4	18 9½	7 8½	19 7½	14 0½	8 3½	13 11	2 10½	1 6 4½	16 5
Net {Loss	—	—	10 1½	—	—	—	—	—	—	—	—	—	—	—	—

Field Number	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	7 10	9 6½	13 4½	13 8	6 3½	9 8½	8 8½	8 2½	9 6½	4 7½	7 8½	9 11½	8 8½	6 1	9 10½
Seed, drilling and after cultivations	7 9½	10 6½	15 6½	14 2½	7 6	11 5	8 11½	7 10½	10 0½	7 6½	10 5½	8 3½	11 7½	7 11½	10 9½
Manures	9 11½	18 10½	19 4	1 18 4½	15 7	1 4 11½	1 4 10	4 8	1 7 5½	11 2	—	15 11½	9 1½	5 1	12 9½
Harvesting	11 11	11 3	15 11½	11 6	6 9	10 9	11 8½	10 7½	11 11½	11 3½	1 3 8½	15 0	13 11	7 11½	1 3 11½
Overheads	6 3½	6 4½	10 4½	11 11½	4 1½	6 9½	7 7½	6 9	8 0½	6 11½	13 9½	4 6½	7 7½	13 7½	9 2
Farm cash cost	2 3 9	2 16 7	3 14 7	4 9 8½	2 0 3	3 3 7½	3 1 9½	1 18 2	3 7 0	2 1 7½	2 15 8½	2 13 8½	2 11 0½	2 0 8½	3 6 7½
Transport and Grower's rep'ntative	5 7½	5 10½	9 5½	2 7½	5 1	5 7½	3 4½	3 9½	6 7½	5 2	4 3½	6 3½	7 5½	4 5½	6 9½
Total cash cost	2 9 4½	3 2 5½	4 4 0½	4 12 4	2 5 4	3 9 2½	3 5 2½	2 1 11½	3 13 7½	2 6 9½	3 0 0	3 0 0	2 18 6½	2 5 2	3 13 4½
Gross cash receipts	2 15 1½	2 15 11½	2 18 0½	2 12 1½	2 16 10½	2 17 9½	2 14 11½	2 16 11½	2 16 11½	2 14 1½	2 13 11½	2 15 10	2 19 1½	2 13 4½	2 19 3½
Cash {Profit	5 9½	—	—	—	11 6½	—	—	15 0	—	7 4	—	—	7½	8 2½	—
Cash {Loss	—	6 6½	1 6 0	2 0 2½	—	11 5½	10 2½	—	16 7½	—	6 0½	4 2	—	—	14 1½
Resid. Vals. bt. fwd.	3 4½	3 4½	5 6	2 6½	5½	1 9	1 4½	7½	7 0½	6	2 1	8½	3 1½	8½	5 5½
Gross cost	2 12 8½	3 5 10½	4 9 6½	4 14 10½	2 5 9½	3 10 11½	3 6 7	2 2 7	4 0 7½	2 7 3½	3 2 1	3 0 8½	3 1 8	2 5 10½	3 18 10½
Total credits	15 11½	12 4	16 4	1 10 6½	13 6½	1 0 5½	16 8	12 4½	1 3 2½	11 10	12 1½	12 2½	11 1½	8 3	11 6
Net cost	1 16 9½	2 13 6½	3 13 2½	3 4 4	1 12 2½	2 10 5½	2 9 11	1 10 2½	2 17 5½	1 15 5½	2 9 11½	2 8 5½	2 10 6½	1 17 7½	3 7 4½
Net {Profit	18 4½	2 5½	—	—	1 4 8	7 4	5 0½	1 6 8½	—	18 8	4 0	7 4½	8 7½	15 9	—
Net {Loss	—	—	15 2	12 2½	—	—	—	—	5½	—	—	—	—	—	8 0½

Field Costs and Returns Per Washed Ton—*continued.*

Field Number	101	102	104	105	106	107	109	110	111	112	113	114	115	116	117
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	5 4	4 7½	5 7½	5 5	11 6¼	2 11¼	3 7½	3 6½	3 5	3 6¾	3 5½	3 3	4 1	3 2	3 7½
Seed, drilling and after cultivations	10 5½	7 5½	6 8	8 10	7 2	7 9¾	9 6½	8 4¼	9 2	8 10½	7 10	8 6¾	8 5	8 5½	8 5¾
Manures	6 5	18 10	4 9	1 7½	3 2½	6 4¼	6 3½	6 6	6 5¾	6 2½	6 2½	7 1¼	6 2¾	15 5½	2 8
Harvesting	11 6¾	12 4¾	10 6¾	13 0¾	16 6¾	12 1	12 1	12 1	12 1	12 1	12 1	12 1	12 1	10 3½	10 4
Overheads	4 5	4 9	8 2½	10 1½	14 6¾	7 10	7 10	7 10	7 10	7 10	7 10	7 10	7 10	8 10½	8 10½
Farm cash cost	1 18 2¼	2 8 0¾	1 15 9½	1 19 0¼	2 13 0¼	1 17 0¼	1 19 4½	1 18 3¾	1 18 11¾	1 18 6¾	1 17 5	1 18 10	1 18 7¾	2 6 3¼	1 13 11¾
Transport and Grower's rep'ntative	6 7¾	6 9	5 3½	6 6	5 6¼	2 9½	2 9½	2 9½	2 9½	2 9½	2 9½	2 9½	2 9½	3 5½	3 5¾
Total cash cost	2 4 10	2 14 9¾	2 1 0¾	2 5 6¼	2 18 6¾	1 19 9½	2 2 1¾	2 1 1	2 1 9	2 1 4	2 0 2¼	2 1 7¼	2 1 5	2 9 8¾	1 17 5¾
Gross cash receipts..	2 16 6	2 18 2½	2 10 2¾	2 11 11¼	2 11 4¾	2 9 1½	2 9 1½	2 9 1½	2 9 1½	2 9 1½	2 9 1½	2 9 1½	2 9 1½	2 15 6	2 15 6
Cash {Profit	11 8	3 4¾	9 2	6 5	—	9 4	6 11¾	8 0½	7 4½	7 9½	8 11¼	7 6¼	7 8½	5 9¼	18 0½
Cash {Loss	—	—	—	—	7 1¾	—	—	—	—	—	—	—	—	—	—
Resid. Vals. bt. fwd.	2 7½	2 8¾	5¼	9¾	9¼	5 3½	7	1 5½	5 3¼	5 3¼	5 3¼	3 6¼	5 3¼	7½	7½
Gross cost	2 7 5½	2 17 7¾	2 1 6	2 6 4	2 19 3¾	2 5 0¾	2 2 8¾	2 2 6½	2 7 0¾	2 6 7½	2 5 5½	2 5 1½	2 6 8¾	2 10 4¼	1 18 1
Total credits	7 2¾	14 8¾	5 6½	7 2¾	8 1¾	7 6½	8 0¼	7 8	7 9¾	7 10¼	7 8½	8 3½	7 9	15 1	9 10½
Net cost	2 0 2¾	2 2 10¾	1 15 11½	1 19 1¾	2 11 2	1 17 6¾	1 14 8½	1 14 10½	1 19 2½	1 18 9	1 17 9	1 16 10	1 18 11½	1 15 3¼	1 8 2½
Net {Profit	16 3½	15 3¾	14 8¾	12 10	2¾	11 7½	14 5	14 3	9 11	10 4½	11 4½	12 3½	10 2¾	1 0 2¾	1 7 3½
Net {Loss	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Field Number	118	119	120	121	122	123	124	125	126	127	129	130	131	132	134
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	3 5½	2 4	4 0	4 9½	7 0¾	7 9	9 4¾	9 8½	1 7 0½	9 7½	5 10	11 4	7 2¾	7 2½	8 6¾
Seed, drilling and after cultivations	8 5½	8 4½	8 5½	8 8¾	8 8¾	7 0½	8 4	14 3½	1 11 3¾	17 0¾	5 3	8 7½	9 3½	10 3	1 10 7½
Manures	2 8½	12 1½	2 8½	10 11	2 9¾	9 7½	2 8½	18 9½	1 2 11½	11 11½	13 7¾	1 0 1¾	7 11	1 2 9¾	5 5
Harvesting	10 4½	10 4½	10 4½	9 9¾	9 11	9 10½	9 7½	18 8	2 1 3½	1 2 10¾	8 5	13 6½	1 7 10½	12 9	1 4 3½
Overheads	8 10¾	8 10¾	8 10¾	7 10½	7 10½	7 10½	7 10½	4 9	18 9½	8 6	5 1½	7 2½	4 1½	4 5¾	14 7
Farm cash cost	1 13 10	2 2 1¾	1 14 5¾	2 2 1¾	1 16 4¾	2 2 1¾	1 17 10¾	3 6 2½	7 1 4	3 10 0	1 18 3	3 0 9¾	2 16 4¾	2 17 5¾	4 3 5¾
Transport and Grower's rep'ntative	3 5¾	3 5¾	3 5¾	3 2¾	3 2¾	3 2¾	3 2¾	5 0½	5 8½	5 1¾	4 6	4 3½	6 3½	10 11¾	9 8½
Total cash cost	1 17 3¾	2 5 7½	1 17 11	2 10 3¾	2 4 6¾	2 10 4½	2 6 0¾	3 11 2½	7 7 0¼	3 15 1¾	2 2 9	3 5 1	3 2 8	3 8 5½	4 13 2¾
Gross cash receipts..	2 15 6	2 15 6	2 15 6	2 15 6	2 15 6	2 15 6	2 15 6	2 17 9½	2 13 6½	2 17 0½	2 12 1½	2 12 9	2 18 8	2 19 1	2 14 6
Cash {Profit	18 2½	9 10¾	17 7	5 2¾	10 11¾	5 1¾	9 5½	—	—	—	9 4½	—	—	—	—
Cash {Loss	—	—	—	—	—	—	—	13 4¾	4 13 5¾	18 1¾	—	12 4	4 0	9 4½	1 18 8¼
Resid. Vals. bt. fwd.	7½	2 1	7½	7½	7½	7½	1 0½	1 3	1 8¾	2 4	1 5¾	1 11¾	5 3¼	6 1¾	13 9¾
Gross cost	1 17 11½	2 7 8½	1 18 6½	2 10 11½	2 5 2¾	2 10 11¾	2 7 1¼	3 12 5½	7 8 9	3 17 5¾	2 4 2¾	3 7 0¾	3 7 11¾	3 14 7½	5 7 0
Total credits	7 5¾	11 4	9 10	11 8½	7 6½	10 11¾	8 10	15 1½	1 3 11	14 9¾	11 7½	16 7	9 6	14 9	12 9½
Net cost	1 10 5½	1 16 4½	1 8 8½	1 19 3	1 17 7¾	2 0 0	1 18 3½	2 17 4	6 4 10	3 2 8	1 12 7½	2 10 5¾	2 18 5¾	2 19 10½	4 14 2¾
Net {Profit	1 5 0½	19 1¾	1 6 9½	16 3	17 10½	15 6	17 2¾	5¾	—	—	19 6½	2 3½	2¾	—	—
Net {Loss	—	—	—	—	—	—	—	—	3 11 3½	5 7½	—	—	—	9¼	1 19 8¾

Field Costs and Returns Per Washed Ton—*continued.*

Field Number	135	136	137	139	140	141	142	143	144	146	147	149	150	151	152
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	7 8½	11 7½	9 1½	5 6½	7 3	3 1½	5 8½	5 5½	3 5	18 0½	14 5½	5 9½	10 7½	6 11½	14 3
Seed, drilling and after cultivations	16 11½	1 1 4½	1 2 5½	12 2½	9 6	5 4½	6 8	6 10½	7 11½	1 10 9½	15 10	11 3½	11 4½	10 8½	8 9
Manures	2 9½	6 1½	16 4½	—	3 11	—	13 8½	10 0½	2 2½	1 11 10½	18 5½	13 8½	7 4½	16 0½	—
Harvesting	13 7½	15 8	17 1½	12 1	14 5½	9 3½	9 8½	10 0½	8 10½	17 11½	17 6½	11 5	11 4½	12 3½	14 10
Overheads	8 0½	9 1½	10 0½	6 9½	7 0	4 8½	5 1½	4 11½	6 6½	13 4½	5 11½	8 4½	9 2½	8 10½	8 8
Farm cash cost	2 9 1	3 3 10½	3 15 1½	1 16 7½	3 0 0	1 2 6½	1 10 9	2 1 0½	1 9 0½	5 12 0	3 12 3	2 10 8	2 9 11½	2 14 11½	2 6 8
Transport and Grower's rep'ntative	8 1	9 2½	8 4½	4 6	5 3½	4 8½	4 11	5 1½	4 8	5 5½	5 1½	8 6	18 1	10 10	13 6
Total cash cost	2 17 2	3 13 1	4 3 6	2 1 1½	3 5 3½	1 7 3	1 15 8	2 6 2	1 13 8½	5 17 5½	3 17 4½	2 19 2	3 8 0½	3 5 9½	3 0 2
Gross cash receipts	2 17 9½	2 15 5½	2 17 0½	2 5 5½	2 12 11½	2 9 9½	2 9 12½	2 16 9½	2 18 5½	2 15 8	2 18 2½	2 17 4½	2 17 5½	2 17 4½	2 16 3
Cash {Profit	7½	—	—	4 4	—	1 2 6½	13 5½	10 7½	1 4 9½	—	—	—	—	—	—
Cash {Loss	—	17 7½	1 6 5½	—	12 4	—	—	—	—	3 1 9½	19 2½	1 9½	10 7	8 4½	3 10
Resid. Vals. bt. fwd.	5 3½	8 8½	6 6½	5 3½	8	2 8½	5½	2 3½	4 11½	1 11½	10½	11½	9½	10 6½	9
Gross cost	3 2 5½	4 1 9½	4 10 0½	2 6 3½	3 5 11½	1 9 11½	1 16 1½	2 8 5½	1 18 8	5 19 5	3 18 3½	3 0 1½	3 8 10½	3 16 3½	3 1 0
Total credits	5 6	10 6½	8 8½	11 0½	12 4½	6 5½	8 2	13 10½	11 1½	1 2 1½	16 1½	11 7½	12 10	10 2	10 7
Net cost	2 16 11½	3 11 3½	4 1 4	1 15 3	2 13 6½	1 3 5½	1 7 11½	1 14 6½	1 7 6½	4 17 3½	3 2 2	2 8 5½	2 16 0½	3 6 1½	2 10 4
Net {Profit	10	—	—	10 2½	—	1 6 3½	1 1 2	1 2 2½	1 10 11½	—	—	8 10½	1 5½	—	5 11½
Net {Loss	—	15 10	1 4 3½	—	7½	—	—	—	—	2 1 7½	3 11½	—	—	8 9	—

Field Number	153	154	155	156	158	159	160	161	162	163	164	165	167	168	169
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	12 0½	9 1½	13 7½	8 9½	11 8½	11 3½	8 4	15 6½	4 0	10 2½	3 9½	7 0½	5 8½	6 1	9 1
Seed, drilling and after cultivations	11 10½	11 4½	19 4	14 0	15 0½	7 2½	13 6	1 0 6½	8 5	12 3½	11 0	7 7½	12 2½	7 1	15 1½
Manures	—	11 9½	1 17 8½	1 5 4½	8 10½	18 0	18 4½	17 10½	16 5½	6 3½	9 11	6 1	8 0	19 4½	1 0 2½
Harvesting	11 3½	13 10½	1 3 8	13 4½	13 7	1 2 10½	11 8½	14 10½	9 6½	8 8	11 8	10 3½	8 9½	8 6	13 4½
Overheads	8 8½	8 3½	16 2½	7 1½	9 10½	8 5	5 11½	11 2	4 0½	5 5	6 7½	4 8	5 10½	4 8	11 0
Farm cash cost	2 8 11½	2 14 5½	5 10 6½	3 8 8½	2 19 0½	3 7 9½	2 17 10½	3 19 11½	2 2 5½	2 2 10½	2 3 0½	1 15 9	2 0 7½	2 5 8½	3 8 9½
Transport and Grower's rep'ntative	13 6½	8 3½	9 1	8 2½	6 7½	9 7	7 10	8 3½	4 4½	8 1½	4 6½	4 2	4 2	4 4½	4 8
Total cash cost	2 17 6	3 2 9	5 19 7½	3 16 10½	3 5 8½	3 17 4½	3 5 8½	4 8 3½	2 6 9½	2 11 0	2 7 6½	2 0 3½	2 4 9½	2 10 1	3 13 5½
Gross cash receipts	2 16 3½	2 17 7½	2 14 2½	2 15 11½	2 18 3	2 15 3½	2 17 11½	2 14 2	2 11 2½	2 17 2	2 15 3½	2 15 5½	2 14 9	2 15 7½	2 13 9½
Cash {Profit	—	—	—	—	—	—	—	—	4 5	6 2	7 8½	15 2	—	9 11½	—
Cash {Loss	1 2½	5 1½	3 5 5½	1 0 11½	7 5½	1 2 1	7 9	1 14 1½	—	—	—	—	—	5 6½	19 7½
Resid. Vals. bt. fwd.	9½	10	14 10½	8½	1 0	5 6½	7½	1 1½	1 10½	1 1	1 4	5½	7	1 6	9½
Gross cost	2 18 3½	3 3 7	6 14 6½	3 17 7½	3 6 8½	4 2 10½	3 6 4	4 9 5½	2 8 8½	2 12 1	2 8 10½	2 0 9½	2 5 4½	2 11 7	3 14 2½
Total credits	12 11½	9 9½	1 8 9	16 4	12 4½	16 3½	12 8½	16 4½	10 5½	9 2½	11 1	9 6	11 4½	14 7½	14 0
Net cost	2 5 8½	2 13 9½	5 5 9½	3 1 3½	2 14 8½	3 6 7½	2 13 7½	3 13 1	1 18 2½	2 2 10½	1 17 9½	1 11 3½	1 14 0	1 16 11½	3 0 2½
Net {Profit	11 0	3 10½	—	—	3 11½	—	4 4½	—	13 0½	14 8½	17 5½	1 4 2½	1 0 9	18 7½	—
Net {Loss	—	—	2 11 7	5 4	—	11 3½	—	18 11	—	—	—	—	—	—	6 4½

Field Number	171	172	173	174	175	176	178	179	180	181	182
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	11 7	4 0½	3 11	4 3½	2 6	3 3½	7 4	5 9	7 11½	12 3½	7 5
Seed, drilling and after cultivations	14 3½	9 0½	10 7½	8 3½	6 7	7 9½	13 10½	14 7½	11 4½	8 11½	8 11½
Manures	9 1½	10 5½	6 10	6 0½	8 1	9 5½	6 2½	6 0½	6 0½	1 4 7½	19 4½
Harvesting	12 4½	10 0½	12 2½	8 11	10 3	12 5½	14 3	14 2	14 10½	15 8½	1 1 4½
Overheads	9 9	5 11½	5 11	4 5½	6 8½	7 8	8 9½	8 9½	8 9½	9 8	7 4½
Farm cash cost	2 17 1½	1 19 5½	1 19 6	1 12 0½	1 14 1½	2 0 8½	2 10 5½	2 9 4½	2 9 0½	3 11 3½	3 4 6½
Transport and Grower's rep'ntative	3 9	7 4½	5 9½	8 8½	7 7½	7 5½	5 0½	5 0½	5 0½	3 7½	3 10
Total cash cost	3 0 10½	2 6 10½	2 5 3½	2 0 8½	2 1 9	2 8 1½	2 15 6	2 14 5½	2 14 0½	3 14 11½	3 8 4½
Gross cash receipts	2 14 6½	2 15 6½	2 15 11	2 15 9½	2 18 1½	2 18 1½	2 14 10	2 14 10	2 14 10	2 18 1½	2 15 4
Cash {Profit	—	8 8½	10 7½	15 1	16 4½	9 11½	—	—	9½	—	—
Cash {Loss	6 3½	—	—	—	—	—	8	—	—	16 9½	13 0½
Resid. Vals. bt. fwd.	2 0½	5 1½	3 2½	6	11	8½	1 1	2 2½	4 4½	10½	7½
Gross cost	3 2 10½	2 11 11½	2 8 5½	2 1 2½	2 2 8	2 8 10½	2 16 7	2 16 7½	2 18 5½	8 15 9½	3 9 0
Total credits	10 8½	12 1½	9 6	7 9½	8 10½	9 1	9 5	12 1	9 6	1 0 1	14 3
Net cost	2 12 2	1 19 10½	1 18 11½	1 13 5½	1 13 9½	1 19 9½	2 7 2	2 4 6½	2 8 11½	2 15 8½	2 14 9
Net {Profit	2 4½	15 8½	16 11½	1 2 4½	1 4 4½	18 4½	7 8	10 3½	5 10½	2 4½	7
Net {Loss	—	—	—	—	—	—	—	—	—	—	—

Field Number	184	185	186	187	188	189	190	196	197	198	199
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Preliminary cultivations	5 0½	7 9½	6 0½	10 1½	14 3½	11 1	3 3	3 11½	8 6	7 0½	4 3½
Seed, drilling and after cultivations	9 5½	8 9	10 8	8 6	12 1½	9 9	7 1	7 10½	14 5½	15 1½	13 11
Manures	12 2	6 11½	7 1½	6 11½	1 12 7½	1 1 10½	2 1½	19 6½	1 2 10½	18 8½	3 0½
Harvesting	12 11½	14 2½	14 9½	12 4½	14 10½	12 0½	7 3	11 8½	1 2 11½	1 1 10	15 0½
Overheads	10 3½	10 3½	10 3½	10 3½	9 11½	6 4½	6 7½	5 4½	9 7½	9 7½	12 11
Farm cash cost	2 9 11½	2 7 11½	2 8 11	2 8 2½	4 3 10½	3 1 1½	1 6 4½	2 8 6	3 18 5½	3 12 4½	2 9 3½
Transport and Grower's rep'ntative	4 7½	4 7½	4 7½	4 7½	8 11	8 3½	4 4½	3 10½	6 9½	6 9½	3 7½
Total cash cost	2 14 6½	2 12 6½	2 13 6½	2 12 10½	4 12 9½	3 9 5½	1 10 8½	2 12 4½	4 5 2½	3 19 1½	2 12 10½
Gross cash receipts	2 9 10½	2 9 10½	2 9 10½	2 9 10½	2 14 9½	2 19 2½	2 10 4	2 16 10	2 16 1	2 16 1	2 16 11½
Cash {Profit	—	—	—	—	—	—	19 7½	4 5½	—	—	4 1
Cash {Loss	4 8	2 8	3 7½	2 11½	1 18 0	10 3½	—	—	1 9 1½	1 3 0½	—
Resid. Vals. bt. fwd.	2 0½	6 2	6 2	6 2	1 0½	7½	4 1½	6½	10½	10½	7
Gross cost	2 16 7½	2 18 8½	2 19 8½	2 19 0½	4 13 9½	3 10 1½	1 14 10	2 12 10½	4 6 1½	4 0 0½	2 13 5½
Total credits	12 8½	13 2½	13 6½	14 1	1 1 10½	14 8½	7 0	12 10½	19 11½	18 5½	10 4½
Net cost	2 3 10½	2 5 6	2 6 2	2 4 11½	3 11 11½	2 15 4½	1 7 10½	2 0 0	3 6 1½	3 1 7½	2 3 1½
Net {Profit	6 0½	4 4½	3 8½	4 11½	—	3 9½	1 2 5½	16 10	—	—	13 10½
Net {Loss	—	—	—	—	17 1½	—	—	—	10 0½	5 6½	—

APPENDIX G.

FARMERS' COMMENTS ON GROWTH CONDITIONS.

Farm.	Previous to drilling.	Germination period.	Thinning to harvest.	Harvesting period.
101	—	—	Rain wanted (early June).	—
102	—	—	Wet weather rendered cleaning difficult; warm spell (late July) very beneficial.	Fine (Oct.).
104	—	Rain wanted; birds and wireworm doing damage.	Rain wanted (late May).	—
105	—	Rain wanted; intermittent germination; birds pecking early plants.	Rain wanted (late May).	Very wet (early Dec.); frost (mid. Dec.) stopped lifting.
106	—	—	Looking well (late June).	—
107	—	Good rain; crop came up well.	Too much rain and too little sun.	—
108	—	Good plant obtained.	Looking well (mid. June).	—
110	Good seed-bed obtained on lighter land.	Too cold (mid. May); slight damage by fly.	Too dry, slow growth (late May); too wet (late June).	Good lifting condition (Oct.).
112	Difficult to get good seed-bed.	Irregular germination.	Wet and cold (late June).	Wet and muddy (mid. Nov.).
113	—	Good germination; chopped out in record time.	Sun wanted (mid. July).	—
113A	—	Rather thin plant.	Sun wanted (mid. July).	—
114	—	—	Crop not looking well; sun wanted (mid. July).	—
115	Autumn and spring cultivations difficult owing to wet.	Drilling delayed by drought; plant weak and dirty.	More sun wanted (early Aug.).	Very small roots.
117	—	—	Too much rain (late June).	Good weather (mid. Oct.); too wet (early Dec.).
118	Land in good form (mid. March).	—	Too much rain and too little sun (mid. July); lack of sun all through Sept.	Bad lifting conditions (late Oct.).
119	—	—	Looking well (late June).	—
120	—	Good, even germination.	Cold (mid. June), slow growth.	—
121	Good seed-bed obtained.	Good, even germination.	Some parts of field badly wind blown.	—
123	—	—	—	Very wet (late Oct.).
124	Good seed-bed obtained.	Rain wanted; rather thin crop	Sun wanted; bad sugar prospects.	Sharp frosts (early Nov.); rather small roots.
125	Good seed-bed, but very dry.	Crop came up well.	Wet and cold; growth slow.	—
126	—	—	Good plant, but wants rain (early June).	—
127	Too dry to drill early.	Bad germination, due to drought.	Very cold (Aug.), but no disease.	Wet made lifting difficult; frost (Dec.) destroyed many roots.
128	—			Frosty and wet; lifting difficult; high % tare.
129	Fairly good seed-bed.	Rain wanted; plant healthy, but poor.	—	—
131	Difficult to get good seed-bed; rain wanted.	Good germination.	—	The worst and most expensive crop of sugar beet I ever grew.
133	—	—	Crop looks well; no pests.	—
136	—	—	Rain wanted (early June); cold, slow growth, too much rain (July).	Roots short and fangy; lifting difficult and expensive.
137	—	Too dry, poor germination.	—	Ground very sticky.
138	Difficult to get good seed-bed.	Too dry; patchy germination.	Inter-cultivation difficult owing to wet weather.	—
139	Good seed-bed obtained.	Good germination, but wants rain.	Too wet (late June).	Harvesting slow; crop yielding less than was expected.
141	—	—	Strong, healthy crop; late singled plants look better than those done early.	—

Appendix G. FARMERS' COMMENTS ON GROWTH CONDITIONS—*continued.*

Farm.	Previous to drilling.	Germination period.	Thinning to harvest.	Harvesting period.
142	—	Too dry.	Dry and cold (May); too much rain (June and July); fly bad and crop backward.	Good weather in Oct., but bad in Dec.
143	—	—	Good crop, though rather uneven; too dry early, too wet late.	—
144	Poor seed-bed obtained.	Cold (May); slow and patchy germination.	Too little sun, too much rain; crop backward.	Heavy rains increased cost of harvesting.
146	—	—	Too dry (late May); a thin crop.	—
149	—	—	Weather showery; crop looks well.	—
152	—	Soil very dry, rain wanted.	Moles doing damage; lack of rain and sun; crop backward; wireworm, rooks and fly.	—
153	—	Very dry.	Crop backward, but healthy.	Poor crop, plenty of top; weather very wet for lifting.
154	—	—	Full plant; wants rain (early June); too much rain (mid. July).	—
155	—	—	Fair crop, but growing very slowly (early June).	—
157	—	Good even germination; rain wanted.	—	—
158	—	Too dry for good germination.	Crop very patchy; very dirty, owing to continued rain (early July).	Land very heavy and sticky; harvesting difficult.
160	—	Dry.	Crop patchy; plenty of weeds; sun wanted.	—
162	Fair seed-bed; rain wanted.	—	Poor crop; too much rain.	—
164	—	Too dry; patchy growth.	Weather dry, uneven growth (early June).	—
166	—	Slow germination; rain needed.	Patchy, wants rain (June); crop backward, wants sun (July).	Too wet.
167	—	—	Wants rain badly (June).	—
168	—	Slow germination.	Crop looks well.	—
170	—	—	Earliest drilled looking well; late drilled suffering from cold winds.	—
177	Difficult to get a good seed-bed.	—	—	—
179	—	—	Crop looks well.	—
180	Fine weather.	Good germination.	Crop looking well.	—
182	Work delayed by wet.	—	Earliest drilled seed looks best; weather cold; moles troublesome.	—
183	Poor seed-bed; rain wanted.	Uneven germination.	Earliest drilled plants look best; later drilled ones want sun.	—
184	—	Good healthy plant (May).	—	—
185	—	—	Plant is not full; moles and wire-worm giving trouble.	—
187	—	—	Plant looking well (early June).	—
189	—	Cold nights, germination slow.	Plant rather thin; too little sun.	Roots small.
190	—	—	Fairly good plant; weather very wet (July).	Wet made lifting difficult and expensive.
192	—	Too dry; uneven germination.	Too wet, difficult to work (July).	—
193	—	—	Earliest drilled looks well; weather rather cold.	—

Appendix G. Farmers' Comments on Growth Conditions—*continued.*

Farm.	Previous to drilling.	Germination period.	Thinning to harvest.	Harvesting period.
194	—	—	Too much rain, very weedy (July); spurry bad; a few bolters.	Roots rather fangy.
195	Difficult to get a good seed-bed.	—	Excessive rainfall, cleaning difficult.	Wet weather made lifting difficult.
196	—	—	Wire-worm and fly; crop looks fairly well.	—
198	—	Rain wanted; uneven germination.	—	Big per cent. tare owing to wet conditions.
199	—	—	Not a full plant.	—
200	—	Uneven germination.	—	—
201	—	Too dry; uneven germination.	Too much rain; plenty of top; a few bolters.	—
202	—	Cold nights, lack of rain, uneven germination.	Too little sun.	—
204	Difficult to get good seed-bed.	Too dry; a rather thin plant.	No rain for 11 weeks (mid. June).	—
205	—	—	Patchy plant, having been checked by drought.	—
206	Land difficult to work.	Land very dry.	—	—
208	Ground very dry.	—	Rain wanted (June); moles; too much rain (July); very weedy.	Roots very dirty and fangy.
209	—	—	Good even crop; sun wanted (July–Sept.).	—
210	Difficult to get good seed-bed.	Germination only fair; cold nights.	Fly and wire-worm affecting early drilled plants; weather very cold and unfavourable.	—
211	Dry seed-bed.	Germination quite good.	Too little sun throughout season.	—
212	—	Uneven germination.	—	—

APPENDIX H.

FARMERS' COMMENTS ON VALUE OF TOPS.

Farm

101. Very fine feed to fold with hoggets; they get fat on them.

102. Excellent for feeding and of inestimable benefit for ploughing in on light soils.

105. Like them for cows and store beasts.

107. Worth more to plough in or to fold than to cart.

108. Equal to any root crop grown; cows milk better and sheep crave for them.

110. Excellent for dairy cows, but carting is the difficulty.

111. Their feeding value for sheep, including ewes, and store cattle, is excellent; my ewes lived entirely on them until within one week of lambing.

112. If my beet crop is grown on light land I use the tops for sheep feed; if it is grown on heavy land and the weather is bad I plough them in. In my opinion there is more immediate return from feeding them, but in the long run I rather favour ploughing in. I never cart them off.

113A. 197 hoggets were fed from the 10th October to the 4th November; from the 4th November to the 6th January 160 hoggets were feeding on the tops.

114. I quite think you can grow another sack of corn per acre by ploughing the tops in. From a feeding point of view, I consider the tops worth £2 per acre, if not more. In fact, they are almost worth as much as a turnip crop.

115. Very sound food indeed, especially for dairy stock.

117. I believe the tops are quite equal to an average crop of turnips for feed, and beet should certainly replace this crop for economic agriculture. They appear to me to be of about the same food value as cabbage, and are more relished by all stock. However, on land deficient in humus it must be a mistake to collect an already equally distributed coat of organic manure when the returns for fattening are so small, and stock-keeping in general shows such small returns for the labour involved.

118. A good food for stock, but, in my case, of more value as a green manure to assist in raising the fertility of the land which had been badly farmed for many years. In my opinion, on all soils which are inclined to tread and to be of a sticky nature, to plough in the tops and crowns is much the better.

120. I have no actual standard by which to judge the value of beet tops, but from observation I should say that on one of my fields (*Field No.* 38 *in this Report*) they were quite as good as a 10 ton crop of swede turnips. As a manure I should hesitate to put their value at anything higher than 7 loads of farmyard manure (rotted) per acre.

123. The ewes, as we have noticed in previous years, did well, but we have not found them suitable for young sheep.

124. My ewes did very well on the tops, and I consider them a valuable asset. After some years' experience I think it very essential to be careful in changing their class of food after being some time on sugar beet tops, and I strongly recommend a gradual change on to turnips especially.

128. Like them very much for cows, but carting is the difficulty.

129. Should not cart off for any stock except pigs. Not worth clamping.

131. Excellent for feeding to all stock.

Farm

136. Except when folded early, I think they are of less value as a food than as a manure unless they are carted off quite fresh and made into silage, of which I have no experience. For sheep folding I consider them a useful adjunct, but not a complete food.

137. For feeding are of equal value to roots.

138. Sheep did not do well, but cattle liked them. Bad weather made carting difficult.

142. As a food I have found them excellent, especially for dairy cows. As a manure I have no experience, as this is the first year I have ploughed any tops in. I have drilled wheat on one piece, and at present (end of March) it looks well.

144. Excellent for sheep; great possibilities when their management becomes better known.

146. I put their value at approximately £2 per acre.

152. An excellent food for sheep, especially in-lamb ewes. One acre of tops in the early part of the season will keep 100 sheep for three days.

153. I think the tops are a valuable green manure. People round here find the tops very useful as sheep keep.

154. I think the tops make a good manure if you can get them well covered, but they are rather difficult to plough in. Two years ago I had same heaps left in the field till rotten, and the barley which followed was badly laid where the heaps had been. But I consider they are quite as good for stock as roots if you can get them fairly free from dirt.

155. Five acres kept 100 ewes for a fortnight.

158. I think the tops are quite good as food for sows and pigs to take the place of any other green food, in fact I should prefer sugar beet tops to whole mangolds with their tops on. They are also, in my opinion, good for sheep provided they have not been frosted. As regards their manurial value, I should rather have them ploughed in than folded. I have tried one against the other and my crop of barley next year was better after the ploughed in portion of the field, although this may have been partly due to the wet state of the field when the sheep were being folded.

160. They give a large amount of good keep. I found the sheep did well on them and that a few loads carted to dairy cows noticeably increased the milk supply. Weather conditions and the state of the roads precluded much carting with me.

166. Ploughing in gives good results.

167. The ewes seemed to do uncommonly well on them.

168. Have had very good crops, and also moderate ones, after tops ploughed in. It is difficult accurately to estimate their value. Have never used them as a food.

169. In the Fen there is not much one can do with them except plough them in.

178. They make a good coat of manure.

183. Tops have been used in big quantities for cows, growing stock and colts, and I consider them equal to white turnips.

184. On this light land it pays to plough in as a change of manuring from folding. Have fed some to pigs, with no ill-effects. The pigs liked them.

Appendix H. FARMERS' COMMENTS ON VALUE OF TOPS—*continued.*

Farm

185. Very good feed for sheep and pigs, which appeared to do well on them.

187. Sheep did too well on them. All stock do remarkably well provided the tops are not frosted.

192. Good value for cows and, given in moderation, are excellent for milk production. As to manurial value, if one could plough in almost directly they are good; unfortunately, time will not always permit for so doing.

195. The best quality barley grown on this farm during 1927 was on fields where beet tops had been ploughed in.

196. There was an exceptionally large amount of tops, and my in-lamb ewes did very well on them up to the beginning of February. I believe they are equal to a crop of white turnips.

199. Tops are excellent feed for pigs and cows, also for sheep. Care must be taken not to use them too soon after topping. On light soils in particular their value as manure is considerable.

201. I put their value, either for feeding or for ploughing in, at about £1 per acre.

202. I think they are worth about 5s. per cart load for sheep feed as the sheep seem to do very well on them.

204. Prefer to plough in rather than feed them, but ploughing in should be done early

206. Very good for all classes of stock, especially sheep. Never seen bullocks do better.

209. I always fold my ewe flock on the tops, but on one field (*No.* 190 *in this Report*) I had more than I could feed and so ploughed them in. I regard them as good value for green manuring.

212. Excellent for pigs. I wish I was able to store them.

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