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Tomatoes - Marketing

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Tomato Growers' Interests in a West European Market

by

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Wye college

DEPARTMENT OF AGRICULTURAL ECONOMICS

1964

Tomato Growers' Interests in a West European Market

An economic examination of early tomato production under glass in Britain, Guernsey and the Netherlands ; followed by a discussion of the English grower's place in the European market in the event of free trading and "guided" production.

Copies of this report may be obtained, price 6s. 6d. post free, from The Department of Agricultural Economics, Wye College, near Ashford, Kent.

July, 1964.

LIST OF PREVIOUS PUBLICATIONS

		Price (post free)
The Economics of Intensive Horticultural Holdings		
No. 1	Business Aspects of Horticultural Production under Glass	5/–
No. 2	Management Aspects of Horticultural Production under Glass	5/–
No. 3	Investment Aspects of Horticultural Production under Glass	5/–
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FOREWORD

Anyone growing tomatoes on a commercial scale in the British Isles is, as it were, dipping a toe into the ocean of West European commerce. Tomatoes and apples are the two horticultural commodities where there is a strong trade between the industrial countries of western Europe.

Before the signing of the Treaty of Rome in 1956, British thinking about the international aspects of tomato-growing was confined to the traditional idea of competition between one "home" and several "alien" suppliers of the domestic market. This traditional attitude has now been banished from some sections of European industry—atomic power, steel and coal undertakings in the E.E.C. countries, for example, are now in a state of rational economic association. An idea that "a problem shared is partly overcome" has grown up and is characteristic of the new philosophy of late twentieth century business. Sharing in international markets does away with some of the undesirable effects of free competition. Organised replacement of marginal high-cost sources of supply and selective development of preferable sources are steps towards raising producers' incomes in relation to their selling prices, and is justifiable because economic evolution always tends to drive down prices relative to costs. (In the British Isles, for example, the National Coal Board is engaged on a national scheme of marginal re-distribution of resources in much the same way.)

Many English tomato growers are afraid of a "sharing" movement of this kind. They assume that what they have heard so often must be correct, i.e. that their markets would vanish overnight if their present degree of protection was removed. But this would only come to pass if there was chronic overproduction of tomatoes and no discrimination by British consumers between English and other tomatoes. Actually, there is no chronic surplus of tomatoes in Western Europe and no shrinking market to which producers will have to adjust in the hard way. The real situation is quite the reverse: there is a limited glasshouse area, and the problem common to all West European producers is one of using productive capacity in a rational way so that producers gain and consumers do not lose. The process and the policies by which this aim could be realised involves the "harmonisation" of interests. Given greater knowledge of other producers' situations, international agreement can achieve a stability in trading which is not achieved when tariffs are the controlling agent: this has already been demonstrated in the recent agreements about meat supplies made between Great Britain and other countries.

This attempt by Dr. Folley to find a *modus vivendi* for the tomato industries of Britain, Guernsey and the Netherlands was begun after the calculation and publication by Wye College of an annual cost curve for Guernsey tomato growers. Means of repeating this for the other two communities were explored, partly

with the object of contributing towards a rationally conceived policy for tomato-growing, and partly with the object of tracing, initially in a very simple way, the nature of problems inherent in establishing equity between producers on an international basis.

With the help of the Dutch growers' marketing organisation, the Central Bureau of Horticultural Auctions in the Netherlands, the author has been able to get some first-hand knowledge of conditions in south Holland. Thanks are also due to the Agricultural Economics Institute (Landbouw-Economisch Instituut) in the Netherlands for permission to draw heavily upon their published reports. The experience of the Dutch is emphasised in this study for the good reasons that tomato growing is far better-documented in Holland than elsewhere and that Dutch growers will continue to set the pace in the English tomato market.

G. P. Wibberley,

Professor.

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PART I.

THE PRESENT SITUATION

CHAPTER 1

AN ANALYSIS OF THE RECENT GROWTH IN DUTCH TOMATO-GROWING

In a context of West European production of tomatoes under glass, the two most striking recent features have been :

(*a*) the growth to pre-eminence of Dutch production ; and

(*b*) the increased output early in the marketing season.

These two features have a common cause in that much of the increased output of Dutch tomatoes has been from early, heated houses. During this time of transformation of the Dutch glasshouse industry, growers in England and in Guernsey—the two other major suppliers of the English market—have been confined, so to speak, to their half of the playing field, keeping a dour and comparatively static defence against the incursions of Dutch tomatoes.

English-speaking tomato growers* were already defensively-inclined when the negotiations for Great Britain to join the European Economic Community were begun : their resistance to change was, if anything, stiffened by the thought of operating in one, west European market instead of in a protected United Kingdom market. Prejudice could hardly be ruled out from the English growers' attitude towards joining the Common Market ; and supposition was the best type of argument that they could use against it. All interested parties were in varying states of ignorance about the British grower's ability to compete with the Dutch grower even in the English market.

Upon examination, it appears that the Dutch tomato industry notwithstanding its considerable dynamism, regulates its growth according to demand and is not likely to over-produce : and, furthermore, that in some circumstances a planned, free-trading tomato economy for west Europe would require English growers to produce more early tomatoes than they seem prepared to produce under the present degree of protection from imports.

Comparative Trends in Holland and Elsewhere.

In the years since 1958 there has been a declining trend in the area of heated glasshouses in Britain and partial replacement of the lost area with the less expensive and lower-risk cold (often mobile) houses. Tomatoes have also occupied progressively less of the diminishing area of glass. Between 1955 and 1961 Britain lost about 175 acres (10 per cent.) of its heated glass, and about 650

**This term is used to include Guernsey and English growers.*

acres (27 per cent.) of its area of heated tomatoes. In the Netherlands the trend in area has been the other way. Acreage of heated glass, and of tomatoes, has increased at a steady rate since 1949. In fact, between 1955 and 1961 the acreage of heated houses was doubled as 1,750 acres were added. Expansion on this scale must have involved an investment of some £25-£30 million. In Guernsey—which for a short period of years dominated the early tomato market in Britain—there has been little change in acreage since 1947 (there was in fact until recently a veto on building additional houses). Some neglect of houses has, however, occurred there, and more growers are turning to flower production. Consequently exports of Guernsey tomatoes to Britain have fallen from the peak of almost 50,000 tons reached in 1959.

Changes on the Dutch Holdings.

Recent movements within the Dutch tomato industry can be followed from the publications of the Netherlands' Agricultural Economics Institute (abbreviated to L.E.I.). Since 1958 the area of glass on the tomato-growing holdings (402 of them) covered by the Institute's enquiries has increased, and the average area is now between 1¼ acres and 1½ acres (see Table I). The changes have come about largely by growers putting up new heated houses rather than by adding heating systems to the existing cold houses. The land on the holdings is limited, of course, and some other enterprise has had to be reduced in scale or abandoned to make room for the new glass. On most holdings it was the frame yard (Dutch lights on the flat) that was given up.

The indications below are that the expansion has been faster in the area specialising in early tomatoes (de Kring) than in the Westland. De Kring has about 75 per cent of its houses heated, while the Westland has about 42 per cent.

Table 1—The Netherlands: Changes in Composition of Glass Area on Tomato Holdings, 1958-1961.

		acres per holding			
		1958	1959	1960	1961
De Kring	total glass	0.92	1.07	1.32	1.30
(early production)	heated ,,	0.65	0.79	0.94	1.00
	cold ,,	0.27	0.28	0.29	0.30
Westland	total glass	1.20	1.27	1.35	1.42
(mixed production)	heated ,,	0.40	0.47	0.58	0.67
	cold ,,	0.80	0.80	0.77	0.75

Source: Rentabiliteit van de Tuinbouw in het Zuidhollands Glasdistrict, 1960.
Ditto, 1961.

Contact with a sample of glasshouse holdings enables the Institute to follow their progress, but it does not provide knowledge of the number of new holdings established. A family holding tends to grow to a certain size (as will be disclosed later) and then stops growing itself and produces satellites instead. It is thought that in the traditional glasshouse areas expansion on parent holdings has been greater than on satellites. Glasshouses in Holland are now cheaper in real terms than ten years ago, and this has helped to spread the fashion of expansion on to holdings where it was not justified as well as on to holdings where it was.

The Origins of Growth.

Looking to the future, it becomes important to know whether the expansionist policy of the Dutch tomato growers was a product of the fervour then prevalent within the E.E.C., or whether it arose, more privately, from their own experiences. If the former, the rate of expansion will decline when the rate of economic growth in the Community declines: if the latter, the rate of expansion of the tomato area may tend to be more sustained through a period of pause in general economic growth. The more probable conclusion is that the Dutch tomato grower is mainly influenced in his business decisions by his own net cash income. After his own and his family's immediate needs have been met, he will use most of the unspent revenue for modernising or enlarging his holding. In the present circumstances of family-type businesses and good prices for tomatoes, up to 20 per cent of the revenue the grower receives from the market becomes available in this way.

What, in fact, made Dutch growers conclude that they could expand with advantage, and, secondly, that new houses were needed? There were alternative policies of proceeding by (*a*) increasing yields from the present area, or (*b*) innovations in technique. Both of these alternatives were set aside in favour of the speedy but more expensive and long-term way of increasing production by adding to productive capacity.

The expansion in size of business was not restricted to tomato-growers. Outdoor vegetable growing has been in the doldrums, but otherwise all non-fruit sectors of horticulture—bulb growing, tree-raising, flower-growing—have been highly and equally profitable, and flower growers have expanded in the same way as tomato growers. All this activity arises, in part, from the "pull" of demand for ever more glasshouse products. Foremost among the "push" factors was a level of annual cash surplus sustained at well above the 1955 level. This is not simply a matter of the Dutch growers making increasing profit over this period. By the standards of English-speaking growers, costs, returns and profits on Dutch holdings are all low. The average "book" (i.e. accountant's) profit on holdings in south Holland varied between £500 and £1,000

an acre during the three years 1958-60, which would mean a sum of between £750 and £1,500 on the "average" holding of 1½ acres carrying a "book" investment of £10,000 to £15,000. Expansion, however, has continued all through this period although during the last two years *profits* from early production (de Kring) were lower than for any previous two-year period since 1955 (see Table 2).

Table 2—Financial Results on Mainly Tomato-growing Holdings, 1955-60

	Index of Net Profit per Holding (1955/6=100)						
	1955	1956	1957	1958	1959	1960	1961
Heated houses							
de Kring	62	138	86	126	132	75	108
Westland	83	117	135	127	120	110	150
Cold houses							
Westland	87	113	131	67	90	185	159

Source : Publications of the L.E.I.

The Profit Motive

Nevertheless, financial gain has been one motivating influence on the Dutch holdings and certainly the most important economic influence: there are also strong social influences which will be referred to later. But in this connection the "profit motive" takes on a novel aspect. Dutch growers were not solely inspired by the prospect of profits to be earned, but were also activated by "profits" already earned. "Profit" in this context has an unconventional meaning: the way it is constituted on a substantial, family-type business differs from that on the limited liability type of business run by an entrepreneur who, as proprietor, contracts to pay himself a salary and a notional reward for risk-taking before assessing his annual profit.

At first sight it looks as if Dutch growers' expectations and standards of actual profit have been so much lower than English growers' that Dutch growers have continued to re-invest in glass at low levels of profit which would spell stagnation for the English industry. It is known, for example, that an English grower producing an early tomato crop of 60 tons an acre will receive some £9,000 an acre in revenue and not less than £1,500 an acre profit —on a lower book investment that the Dutch grower—but he does not construe this as an argument for expanding his area of glass —by borrowing, if necessary. But levels of profit on Dutch holdings have not been large enough to finance the expansion that has taken place. It can be shown that the large family businesses characteristic of Dutch tomato growing have produced cash sur-

pluses infinitely larger than the actual book profit and it is this phenomenon, not the comparatively meagre profit, which has activated Dutch growers. An explanation of why large cash surpluses accrued is offered in the next section.

Costs and Retained Income in Holland since 1958

Increases in costs have been experienced by the Dutch tomato growers in the last five years, but in a peculiar way their effect has been less repressive than in England and possibly Guernsey. By the end of 1961 average wage rates on holdings in the industrialising south Holland area were on a virtual parity with the general level in Britain: a skilled glasshouse worker would have been earning £500 a year, exclusive of social benefits.

At least 60 per cent. of total costs of producing early tomatoes comprises labour and fuel costs. Up to 1961, however, procurement of fuel and labour, taken together, had not eaten into the Dutch growers' profits to an appreciably greater degree than in the past: the joint cost of fuel and labour had been kept down. As one Dutch commentator has said, "The price of oil is a product of the energy policy of the Government". In other words, the international market price of oil applied in the Netherlands while in Britain there was a tax surcharge in the coal mining industry's interest. Many Dutch growers were paying so much less for their oil in 1961 than in 1958 that they could carry the higher wages of *paid* labour without increasing *total* costs. The recent annual price indices for glasshouse, labour and heating fuel in south Holland are given in Table 3.

Table 3—South Holland: Index of cost of agricultural labour and heating fuel 1958-61* (1958=100)

	1959	1960	1961
Labour	100	111	120
Coal	98	97	94
Fuel oil (800 sec.) ...	79	73	74
(3,500 sec.) ...	77	62	62

Were there no change in the cost of other resources used, or in the combination of resources, total costs per acre would, on paper, have been 5.5 per cent. higher in 1961 than in 1958. Cash costs, however, could well have been *lower* in 1961 than in 1958—thanks to the high proportion of family labour in the staffing of the Dutch holdings. There would have been no necessity to rely more on family labour in order to realise this reduction in cash costs. Typically, growers and their families constitute 55 per cent.

* *Contributed by the Landbouw-Economisch Instituut*

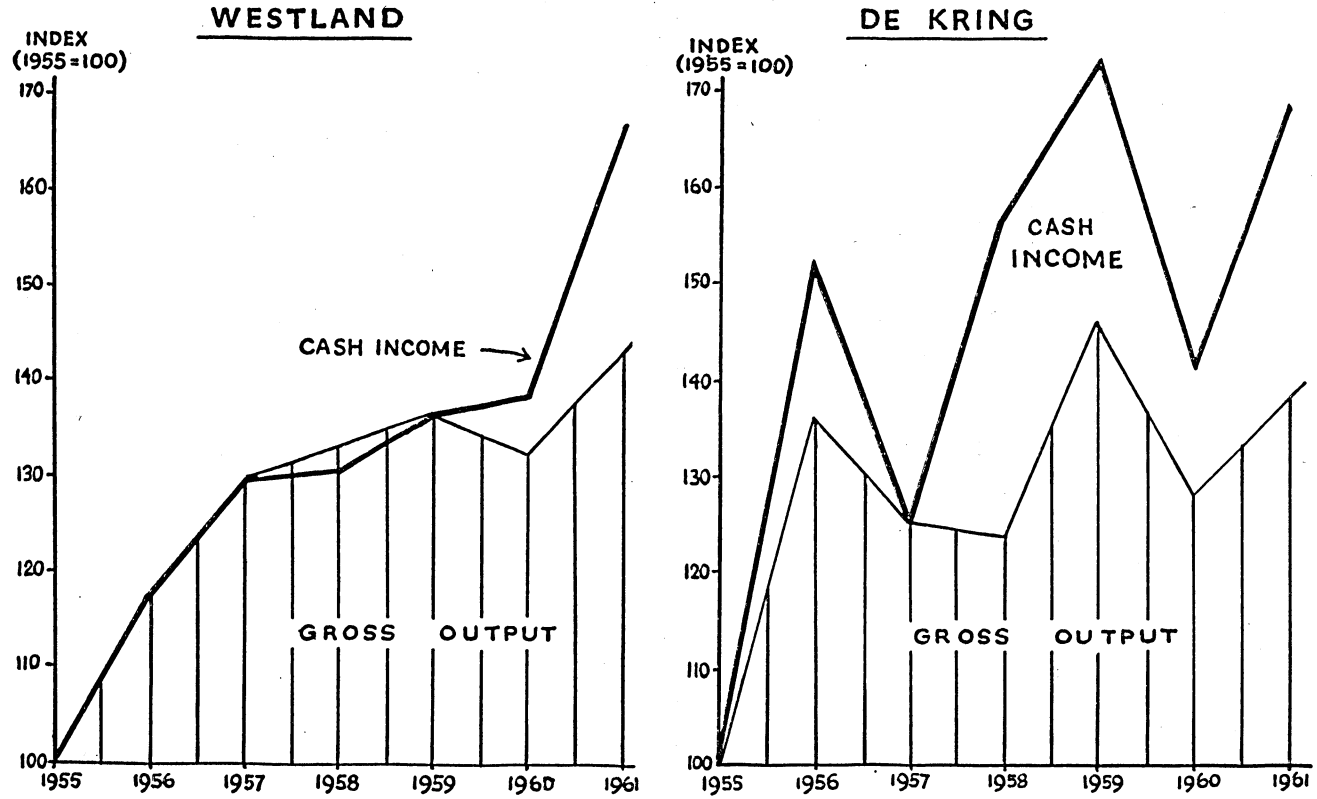
of the regular workers on tomato holdings, so the rise in labour cost would be felt for the paid regular employees and casual workers only, and would apply to perhaps 60 per cent. of the total labour force. This circumstance reduces the percentage increase in the cash cost of labour from the full 20 per cent. to 12 per cent. above the 1958 level. On oil-burning holdings, savings on fuel cost would have exceeded the increased expenditure on paid wages.

Thus with the Dutch growers' auction prices higher than in the past and very little more money than formerly being paid away in annual expenditure, sizeable funds available for re-investment have been realised. It is these funds, rather than outright profits, which are the probable key to the expansion of the Dutch industry. The liquid funds have been converted into more glass, output per holding has increased and more liquid funds obtained. Probable movement in (*a*) gross output per holding, and (*b*) retained cash income are charted in the diagram on page 13. Output on the Dutch Institute's sample of 200 glasshouse tomato holdings has risen 40 per cent in the last six years. Obviously, growers have been handling more and more money each year—and of course they have been keeping more of it. Retained cash income has increased to a greater extent than output—by as much as 60 per cent.

In fact, the family-type glasshouse holding has tended to accumulate money. The farm family often includes two joint proprietors, and some part-time workers, and they, together, realise a substantial labour income which is augmented by the true profit, and the depreciation or upkeep allowance and the interest on personal capital charged on paper.

FIGURE 1

Netherlands' Tomato Holdings: Index of Gross Output and Estimated Cash Income per Holding 1955-1961 (*average* 1955/56 = 100).



Social Pressure to Expand

Dr. Wm. Kemmers, chief economist of the Bureau of Horticultural Auctions in the Netherlands, adduces further reasons for the dynamism in the Dutch glasshouse industry. He particularly stresses three points:

1 the high marginal return on capital invested in heating glasshouse crops, which can explain the tendency to heat more and more previously "cold" houses;

2 the relatively high increase in demand for products of heated houses, which would explain the tendency for new heated houses to be built;

3 the large-scale use of credit, which amounts to an *anticipation* of investable surpluses and intensifies and quickens the pace of advance; in effect, the taking-up and repayment of credits is another aspect of the investment cycle already outlined. The Dutch grower has good opportunity to take up investment credits: over time these are repaid, and when, after a number of years, with redemption completed, the credit capacity of the holding has increased, credit is again taken and the expansion cycle repeats itself.

This feature is closely related to social factors. Dutch growers constitute a rather rigidly closed society, with a strong professional bond. The average size of families is high, and for a time family workers contribute much to the cash surplus of the parental holding. At a later stage, the pressure of succession becomes acute, and available funds, or credit, as the case may be, are employed to establish new holdings for the next generation.

Glasshouse growers' use of credit has recently been made the subject of a special study by the L.E.I. Their report shows that, on average, the tomato holdings in south Holland are constituted to at least 30 per cent. of borrowed capital, with some differences between the two areas *Westland* and *de Kring*; notably,

	Westland	*de Kring*
Borrowed capital ...	37%	28%
Proprietor's capital ...	63%	72%

Numbers of growers who have borrowed extensively are in what the Institute describes as a "very illiquid" position, their "net worth" being below the minimum considered essential for further progress.

Institutional factors cannot be overlooked. In this connection Dr. Kemmers mentions the credit banks and the tax system. The part played by public authorities in granting credits is insignificant. Under the existing system the personal qualities, skill and background of the applicant can be acknowledged in a way that would not be possible in a commercial capital market. Accelerated depreciation of the new investment makes for a small taxable income,

increasing the cash surplus in the early years and enabling the grower to redeem his credit liability at an accelerated rate.

Overall Results on Early Tomato Holdings.

The general economy of Dutch early tomato growing holdings at the start of the present decade is revealed below, in figures which have been extracted from economic reports upon horticulture in the Netherlands for 1960 and 1961 (Table 4).

Table 4—Some Financial Indicators, Netherlands' Tomato Growing, 1960 and 1961.

	On the average holding			
	De Kring		*Westland*	
	1960	1961	1960	1961
Approximate area of glass	1.5 acs.	1.5 acs.	1.25 acs.	1.4 acs.
Costs (including depreciation and interest on capital)	£6,770	£7,070	£5,610	£5,790
Net profit	£1,020	£1,440	£910	£1,240
Profit as % of costs ...	15	20	16	21
Profit as % of investment	6	8	6	7
% failing to make a true profit	36	29	29	18

Source: Rentabiliteit van de Tuinbouw in het Zuidhollands Glasdistrict 1960.

Ditto, 1961.

So the present-day situation is not universally rosy for Dutch tomato growers, as witness the considerable proportion of holdings in de Kring on which a true profit was not realised. The Westland too, has its problem holdings. For growers in both areas the rate of return on capital is significantly lower than five years ago—but, again, this is to be expected as the capital employed per holding increases. So far, however, the cycle (or spiral) of more output, more liquid funds and more investment has continued. In the short period, too, there will be further investment in known labour-saving, automatic aids such as controlled ventilation and plant feeding. Increasingly, the environment of the tomato plant is being automatically regulated, and whilst none of the jobs associated with the environment was time-consuming in itself, to have them taken care of leaves the grower free to work without interruption on the plants themselves. For this reason the limit in area which a grower and his family can work has not yet been reached. Shortage of labour was not putting a brake on expansion before 1961, and it must be concluded that the area of heated glasshouse tomatoes in the Netherlands will continue to increase for a few more years.

Contraction in England and Guernsey

It has been shown that a combination of opportunity (in the German market) and business structure can account for the observed features of the expansion of early tomato growing in Holland. In this sense, the first pickings each year exported to Britain were in the nature of a by-product of the flush of crop from mid-May onwards destined for Western Germany. British growers, of course, had the same opportunities in their own market, but they did not take them. Why? English growers thought they were facing a prospect of a falling real price of early tomatoes, the Dutch grower an increasing money price (as is argued in Chapter 3). In these circumstances it is understandable that English-speaking growers were more concerned about efficiency of production and reducing unit costs than about having a large business, because economies of scale in tomato growing are inconsiderable. Other influences on tomato growers' policy decisions are to be found beyond the bounds of their annual accounts. In Britain, the business men in horticulture have been relatively loth to borrow money and to expand their activities. The "pull" factor has been weak, and the "push" factor has tended to operate in the reverse direction to that in Holland. There may be instanced (*a*) the much greater opportunity to sell out to property developers in Britain, (*b*) the much "easier" long-term credit situation for growers in the Netherlands, and (*c*) the quicker switch which the British grower can make to more profitable crops than tomatoes. In general, what applies in Britain applies in Guernsey to a lesser degree.

The Clyde valley, let it be noted, has not lost glasshouses to anything like the same degree as the Lee Valley. Economic expansion has had little meaning for Scotland recently, and it may be that both "push" and "pull" forces are attenuated there.

Nevertheless, when all is said and done, there is that residuum of the Dutch growers' temperament and attitude to work which, had geographical positions been reversed, would no doubt have secured for him a slice of the German market from the relatively distant United Kingdom. Once earned, the Dutch grower will not dissipate his profits as readily as the English grower.

Chapter 2

A COMPARISON OF PRODUCTION COSTS AND PRODUCTION METHODS

The Importance of the Early Crop

Tomatoes are eaten in the United Kingdom, either cooked or raw throughout the year. The demand in winter, when whole tomatoes are wanted for cooking, remains stable: it is during the late spring and early summer months that the increase in demand is evident, and to which the Dutch growers have "cottoned-on". This is also the time of highest premium of English tomatoes over imported tomatoes. Although English-speaking growers may have derived little satisfaction from the increased consumption, it must be accepted as a fact. Shown below are figures of estimated monthly spending on fresh tomatoes in U.K. wholesale markets in 1956 and again in 1961.

Estimated Monthly Expenditure on Tomatoes (at wholesale): United Kingdom, 1956 and 1961

	1956		1961	
	£		£	
March, April ...	325,000		450,000	
May	4,950,000	(4 wks.)	10,490,000	(5 wks.)
June	10,250,000	(5 wks.)	8,343,000	(4 wks.)
July	6,800,000	(4 wks.)	8,676,000	(5 wks.)
Total	22,325,000		27,959,000	

Source: Annual Reports of the Tomato and Cucumber Marketing Board.

By 1961 the supplies of Dutch tomatoes on the British market during the first three months of the summer season were equal in volume to those of Guernsey and of early growers in England. Previously, supplies from Guernsey and from home sources had been about equal, and individually both had exceeded imports from Holland.

Britain, Guernsey and Holland: Comparative Data

The following computations, then, are mainly relevant to the early heated crop, i.e. to about 35,000 tons from heated houses in Guernsey, 25,000 tons from early houses in England and Wales, and the 80,000 tons from South Holland marketed before the end of July. Neither the separate industries nor their product can be entirely fairly compared in this way. The Dutch industry fits most

neatly into the period of time covered. British and Guernsey growers habitually market right through to November, and the average cost and average price of the early-picked crop are deflated as a result. In Britain, too, there is a well-established difference between the "early" grower and the "main crop" grower, the latter starting to market in May, some three to four weeks later than the former. The main crop grower will obviously experience more of the effects that are not taken into consideration in these computations. The English "main crop" practice is geared to the June demand, but does not seem to give significantly lower costs per ton than the early crop.

Sources of Information

Lack of homogeneity within the industry has already been mentioned. An attempt to place an economic analysis of tomato-growing in the three communities concerned on one common basis is further bedevilled by the differences in scale and type of documentation. This effort at comparison was touched off by the publication of an annual cost structure for the Guernsey industry. To supplement this for the purpose in view there were available, for South Holland, industry-wide reporting on costs, returns and profits on 420 glasshouse holdings in South Holland ; and, for Britain, financial records of single holdings, and small-scale surveys of fringe-type holdings.

It was thought that an enunciation of both (*a*) the middle position and (*b*) the range of costs, would be helpful as a starting point to the consideration of the economics of 1970. The general picture for South Holland has been worked-up by weighting results for each type of early practice reported, assuming that the sample of reporting holdings was representative of the whole industry. The general picture for Britain (excluding Scotland) was built up from certain assumptions and formulae—which, for those interested, are given in an Appendix. The hypothetical nature of the figures for British practice must be all too clear.

Cost Accounting Method

Rather apart from questions of non-homogeneity in industry and material are the questions of relating cost figures to the period of time under consideration : here there can be similarity.

In the long-term, all costs of production, including the replacement of glasshouses, have to be exceeded by revenue or else an industry will succumb. The period 1962-1970, however, is essentially short-term in that tomato growers will continue to produce throughout the period so long as their cash outlays are exceeded by revenue. (Family and proprietors' due wages are here considered to be cash expenses.) Questions of joint cost also arise. Each of the three communities has some holdings growing only tomatoes, some growing tomatoes and other crops in either the same or separate houses.

To meet this situation, the following procedure has been adopted :

(*a*) to charge all includable costs on the holding to one crop when the houses grow only one crop a year ;

(*b*) to apply the formula—

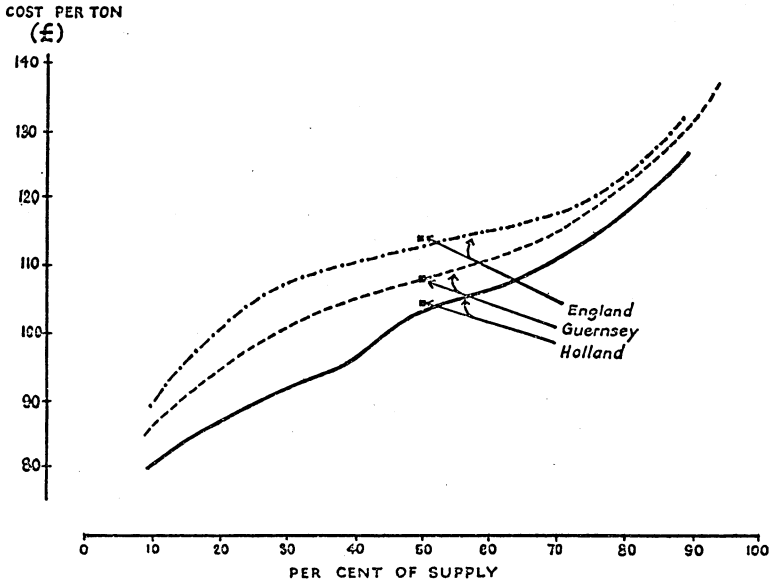
cost of tomatoes=costs on the holding minus revenue from non-tomato crops

to holdings where the non-tomato crops constitute 20 per cent. or less of the total revenue ; and

(*c*) to charge costs on the holding to tomatoes proportionally to the tomato crops' use of houses during the year on holdings where non-tomato revenue exceeds 20 per cent. of total revenue.

FIGURE 2

Estimated Cumulative Cost Curves for Heated Tomato Crops: England, Guernsey and Holland.



This procedure cannot fully equate specialised and mixed production, but it is the one most likely to provide estimates of comparative effective supply prices.

The two measures of cost obtained (for a middle-position producer and for all includable producers) lend substance to each other. The middle-cost position for Guernsey was known : that

for South Holland and England—produced from the same data but by a different method as the cost-curve for all producers—was within £2 a ton of the cost obtained from a free-hand smooth curve joining the calculated points for all producers (see Figure 2).

Cost Structures

Table 5 (below) provides an estimate of the costs per acre and per ton incurred on middle-cost holdings in England, Guernsey and South Holland. Included in the costs are unpaid labour, unpaid depreciation (or upkeep) and interest on borrowed, but not on personal, capital. The middle-cost is of more practical significance in England than in the Netherlands : in the Netherlands it is probable that few holdings are "average" in respect of cost per ton ; many are above average, many more are below average.

Some salient features are brought out in this table. What has been called the "extensiveness" of Dutch practice can be seen in the low cost of materials. Before British readers explode over the levels of cost shown for labour and fuel it would be well to remember that not only is the number of plants worked per man much higher in the Netherlands than elsewhere but both labour and fuel are applied to early tomatoes, on average, for only seven to eight months of the year. Also, when non-tomato revenue is deducted from total costs in accordance with the costing principles outlined earlier, labour is the cost that is most reduced. Overhead costs are higher in the Netherlands than elsewhere, largely because of the amount of new investment. It would be well to remember, nevertheless, that for the cost shown, English growers are not appreciably modernising their production equipment and neither are Guernsey growers ; but Netherlands growers are doing this.

Table 5—Direct Cost per acre of early, heated tomatoes, 1960.

	Guernsey	*England*	*Holland*
	£	£	£
Labour—paid ...	1,607	1,963	560
—unpaid ...	568	393	600
	2,175	2,356	1,160
Materials—fuel ...	1,601	1,667	1,210
—other ...	791	813	340
	2,392	2,480	1,550
Contract work and services	181	—	390
Total direct costs ...	4,748	4,836	3,100

Estimate of Allocations of Cash Overhead Cost per acre

	Guernsey	*England*	*Holland*
	£	£	£
Business expenses ...	200	242	92
Interest on borrowed capital	102	108	173
Maintenance of houses	326	302	460
	628	652	725
Yield per acre (tons) ...	50	47.5	36
Cost per ton ...	£107	£115	£106

NOTE. Labour cost is a net cost (labour cost incurred in tomato houses minus the net receipts from catch crops).

Observations on the Cost Data

While giving due regard to the element of speculation in the figures obtained, it is thought that the following observations are fully permissible.

1 The Netherlands has much the largest proportion of low-cost producers. These are mainly the larger holdings which are also successful in the growing of winter crops of lettuce. Perhaps 40 per cent of the supply of Dutch early tomatoes has this low cost character. Another 40 per cent is possibly not low-cost, and has a cost per ton (as grown) higher than that of the most efficient British and Guernsey holdings. The Netherlands' industry is not without its "tail" of marginal producers.

2 Guernsey has a lower average cost than Britain—perhaps because of the similarity of production practice on that island. (British growers vary their practices more). The "average" cost of the early crop may well be £5 a ton below that of England and £5 a ton above that of South Holland. The Guernsey "tail" appears longer than elsewhere.

3 Britain is characterised by having very little low-cost production. It also appears that at least half the British crop (which, it must be remembered, bulks relatively late) is produced at a cost of between £105 and £120 a ton. The method by which the costs were derived would not throw into relief the highly-efficient holdings: South Holland appears to have a sizeable stratum of such holdings, producing at £80-£90 a ton, but the stratum in Guernsey was too thin to be recognisable.

4 In all these communities a cost of £125 a ton or less could apply to 80 per cent. of tomatoes grown. Any system of cultivation which cannot produce early tomatoes at a cost of less

than £125 a ton is not likely to be viable. Where environment sets a limit to tomato crop yields, it seems that cash expenses should not exceed £5,000 an acre on a 40-ton crop on a specialised holding, £6,250 on a 50-ton crop and £7,500 on a 60-ton crop. With the cash overhead cost element fairly steady at £650 an acre, some £110 a ton becomes the limit for labour, materials and services for growers following British practices.

How Good are Dutch Growers?

The array of production costs emphasises the economic superiority *of a large section* of the Dutch industry. Such approbation, however, cannot be extended to the industry as a whole.

Dutch tomato growers are not a race of supermen ; their holdings are not always a model for the world ; they are not all wizards of husbandry and they are currently concerned about the eating quality of their produce, and as is shown later the number of "uneconomic" holdings in Holland is an argument for increasing early tomato production elsewhere. As has been stressed before, the key to their progress is to be found as much outside their houses as inside them. In other words, their *business* methods are no less important than their crop *cultivation* methods. Remember also that the Dutch early tomato industry (in its present size) is comparatively new. In 1950 two-thirds of Dutch-grown tomatoes were grown in unheated houses, and the acreage of early tomatoes was about one-third of that in England and Wales. To a much larger extent than in England, Dutch early production is "grown up" or intensified cold-house growing, and some of its features—the rate of staffing, for example—may have their origins in cold-house growing. Heating has characterised English tomato practice from the start. Coincident with the development of the Dutch industry has been a period of re-equipment, and modernity of plant is another of the Dutch growers' advantages. Re-equipment on a large scale has not occurred in England (or Guernsey) because in many growers' minds the time to re-equip comes when the holding is moved—sold and re-established on less valuable land—in response to the increase in land values caused by expanding urban areas. So long as this increase could be successfully "farmed" growers had no cause to worry about replacing or re-equipping their nursery from profits retained in the business.

A word about *personnel.* The typical Dutch grower has an investment in his 1 to 1½ acres of glasshouses plus frames and open ground which is large enough to entitle him to some of the prerogatives of a *rentier,* but he chooses to work himself full time on the holding, and to bring his family in to help. In this respect he is different from the English grower of equivalent acreage but similar to the (smaller) Guernsey grower. Unlike the Guernsey grower, however, the Dutch grower and his family will tend two-thirds of an acre of tomatoes in two or three large houses or blocks,

compared with about two-fifths of an acre in five or six houses in Guernsey. The large commercialised holding, entirely dependent upon paid labour, is less characteristic of Holland and Guernsey than of England.

Cultivation Methods

Compared with practice in the English-speaking communities, Dutch glasshouse tomato growing is *extensive*—that is, relatively little labour and expenditure are applied over a big area of glass. The growers with only a small glass area have had either to expand their holding or give up, and because there has been, prior to the current phase of expansion, a continuing necessity to work more glass per man, a tradition has grown up of applying a little labour to a lot of land. This is not the only, or necessarily the best formula for success in tomato growing. Guernsey, for example, has a contrasting tradition: here there is *intensive* cultivation—that is, careful cultivation of relatively few plants. The Guernsey growers' recipe is much labour and expenditure on a small area of land: this kind of combination suits their circumstances better. And no doubt if the Guernsey growers' efforts were *sufficiently* backed up by a superior light and heating regime (that is, if the increased attention given to the plant were *proportionally* rewarded in the crop obtained) Guernsey practice could stand side by side with Dutch as a very successful commercial combination of resources.

Yields per plant in South Holland are not high. In all probability, English or Guernsey practice will give higher yields *per acre,* over any part of the season, if houses and climate were equalised. Nor are plants in Holland so liberally supplied with nutrients as in, say, Guernsey. It may well be, nevertheless, that the Dutch growers have found a superior balance between fruit quality, fruit yield and work requirement than elsewhere, and this enables them to excel in *value of output per man,* which is what matters in commerce. This extensiveness of practice may in part account for the Dutch growers' ability to tend a larger area. Large, regular houses and mechanization of some processes also helps considerably. Having predominantly light, easy-to-warm soils, these extensive methods produce fairly early in the season, round, and regular fruits, 80 per cent. of which will grade out "A". How different a process grading must be when it only involves extracting one tomato in five during sizing as compared with handling the entire crop. This may explain why Dutch grading can be done on the holding whereas a packing station often has to be interposed between grower and market in Britain and Guernsey. Growers using intensive practice may have cause to reflect on the economics of producing tomatoes in a variety of sizes and shapes and then going to considerable expense to have them re-sorted into single sizes for the market.

Business Methods

Tomato growing in Holland has not given growers the present higher level of rewards for very long. Many growers must have known a time when profits were hard to earn, and this conditioned their approach to their calling. Small holdings were weeded out, non-essential expenses were kept to a minimum, and tomatoes (with cucumbers and, formerly, grapes) were grown because they were the only crop with a wide market. The acreage of flowers is controlled by quota. It is not yet clear if this quota will survive the advent of the final Common Market in horticultural products, but at present a recognized tomato grower would not be allowed to convert to flowers quickly, if at all.

This is a very different situation from that in England, where there is complete freedom of cropping. The opportunity to turn to the more valuable flower crops has kept many a small English business profitable, and has not compelled one-time tomato growers either to follow economic precepts with tomatoes or to enlarge their businesses. A business footing and maximum size for the family holding are both features of the Dutch scene. The first may be exemplified in the way lettuce has been fostered as a complementary crop to early tomatoes. Some £5½m. worth of lettuce was sold on the auctions in 1962, and on the most advanced double-crop holdings, one third of all revenue may come from sales of lettuce. The second feature, exemplified by the 5,000 plants per regular man set up as a standard, has been mentioned before.

In searching for reasons for the emergence of the Dutch tomato industry as known today, credit must be given to the information and advisory services available to, and closely integrated with, the growers. Had there been no "escape" crops for the English grower, and had he had to face the same economic hardships as the Dutch grower, he might frequently have given up his holding. However, the Dutch grower has had the ideas of an economic use of resources and an adequate size of business drummed into him by advisers and demonstrated to him in figures by the Economics Institute, and this practical guidance of the grower has been just as important in fashioning the Dutch industry today as easy credit and an expanding market.

In Guernsey, tomatoes have been given a special appeal as a safe crop by the successive increases in the protective external U.K. import duty, which Channel Islands' produce escapes: and as in England, the growers' attention has come to be focussed on tomato cultivation rather than upon running a glasshouse business. An English-speaking grower tends to measure his success by yield per acre, a Dutch grower by his financial margin.

There are contrasts, particularly between Guernsey and Holland, in the length of time the crop is in the houses; but growers are still in the dark about the relative merits of the short-

season and long-season policies. Prices in the Dutch markets during August and September are lower than in Britain, and the Dutch early grower may be correct in removing his plants early in August (although he can expect better prices for a late crop), whilst the English grower may be quite justified in continuing production throughout the summer.

These differences in concept and in cultivation have been pointed out, at the risk of labouring the obvious, in order to show that growers' attitudes to tomato production vary in different circumstances, and that these attitudes are important in determining the ensuing unit cost of production. It is also conceivable that attitudes can change as and when circumstances alter.

Political Implications

The Dutch grower's distinctive economic environment could easily have international political repercussions if there were to be an attempt to take West European tomato production as a whole and guide it in producers' interests. Dutch growers are far more independent of national capital markets than are other growers: they, and not their bank managers, decide when and how they will re-invest in heated glass, and in this way expansion of individual holdings could proceed long after the rate of profit on new investment has ceased to be "economic". Neither the notion of a governing level of "market rate of return", nor of the rate of return in another use of the capital to be invested in glass have much relevance to the Dutch grower's private situation. This matter of the activating return on capital is as thorny as any in the general question of "unfairness" in international competition. The British growers case against the incursions of Dutch tomatoes in the early market, however, is somewhat specious if it looks no further than the superiority of the Dutch in utilization of labour and capital. The average rate of return on personal capital in Dutch heated tomato growing has been for some years close to the effective cost of borrowing.

After the full tally of overhead charges has been deducted from the average Dutch grower's cash surplus, he is left with a relatively slender profit. A fall of 2d. a lb. in the net price home, for example, would eliminate the average profit of 1959-61. The Dutch grower's economic strength is not in his profits but in the thick stratum of non-cash overheads. The true (disposable) profit is not discernible and it has little meaning for him. He may therefore unwittingly incur the odium of practising "unfair competition' in the eyes of producers whose notions of commerce and profit are different from his. Later in this study, when comparative costs of supplying British wholesale markets are worked out, a common basis of a normal profit of £17 10s. a ton has been included in costs. So long, therefore, as English speaking growers get higher yields than Dutch growers, they will be credited with higher profits in comparative

assessments: but what is possibly more important, the imposed "normal" profit has the effect of shifting the cumulative cost curve for south Holland to the left, and the volume of tomatoes Dutch growers can notionally supply at any prescribed price is reduced.

There is also a series of unresolved questions in international comparisons of horticultural practice which concern the use of labour. This has two aspects: cost and productivity. Only if *hours* of labour, differentiated between normal and overtime hours, are properly recorded and then valued at an appropriate rate, can true labour *costs* be known. Comparisons of *productivity* are no doubt often bedevilled by unrecorded differences in length of actual working week. For example, 2.7 men-equivalents per 14,000 tomato plants in one country may be no different in work-input from 4.0 men-equivalents in another country, even when the scheduled working week is the same, if in the first case the few workers put in 70 hours a week, 22 of which are overtime, and in the second case the larger staff works only a normal 48 hours a week. *Flexibility* of the working week becomes a pivotal issue now. If family workers can be induced more easily than non-family workers to put in extra hours when the crop requires them, the family farm will be shown to tend to be more efficient than the non-family farm, even though true labour costs are faithfully recorded; and growers relying on non-family labour can have no quarrel about "unfair competition" from the family farm.

PART II

ELEMENTS OF A FUTURE WEST EUROPEAN MARKET

CHAPTER 3

A FORECAST OF DEMAND, SUPPLY AND PRICE FOR EARLY TOMATOES

Up to about 1962 any benefits from the economic progress of the European Economic Community which tomato growers experienced had been monopolised by the Dutch growers. This situation can be expected to change. Since 1962, numerous plans have appeared, contributed from different sources, on the subject of Europe's future demands for food, and all have been so optimistic as to allay English-speaking growers' fears of redundancy. Having satisfied the prior claim of flowers to the available acreage of heated glass, the English industry could well review its attitude (from the top downwards) to tomatoes as a glasshouse crop.

The Future Demand for all Tomatoes

The general argument here, of course, is the well-known one that increased personal incomes lead to increased consumption of non-basic foods—of which early tomatoes are a good example. More particularly, producers will want to know just *how much* consumption can be expected to increase. Numbers of large-scale studies of future changes in Western Europe's food consumption have been made, many of them in general terms: only a few single out tomatoes for individual mention, and even the best available estimates are too general in one respect—they refer to consumption over a period of twelve months and not solely to consumption during the period of marketing of early crops. A general estimate has to be refined for the purpose in hand. The probable changes in month-by-month demand for tomatoes could well justify a study on its own, but it is treated here as a means to an end and not an end in itself.

United Kingdom. Perhaps the most pertinent future estimates of tomato consumption for British growers are those prepared by the Agricultural Economics Research Institute, on behalf of the U.S. Department of Agriculture, relating to the United Kingdom. Precise estimates are made for 1965 and 1975: interpolating between these figures, and opting for a relatively slow rate of economic growth, produces a forecast that by 1970 potential consumption in the United Kingdom—if today's real prices continue—will then be about 350,000 tons a year: this is 25,000 tons (7 per cent.) more than in 1960-62. There is little hope that this quantity will be available unless imports increase. In fact, tomatoes

could easily be the product for which supply and demand are most out of alignment in 1970—not, as most English growers would conclude, because there are too many on the markets, but because there are too few. Two further conclusions of the Oxford research study are :

(*a*) that if there were to be no change in the import duty, wholesale prices of tomatoes would be 10 to 15 per cent higher in 1970 than in 1960 as a result of their relative scarcity ; and,

(*b*) that annual production of tomatoes from British glasshouses would have recovered some lost ground and would be stabilised between 90,000 and 100,000 tons a year.

European Economic Community. Western European countries, too, will almost certainly be consuming more tomatoes in the years to come. Interpretation of household food budgets and income-elasticity data, in relation to assumed rates of economic and population growth, foreshadows a realistic forecast of 10 per cent. growth in demand for round tomatoes in Western Europe between 1962 and 1970.

In this event, a conservative estimate of future demand in relation to past consumption for all tomatoes, at prices as they are today, will look as follows (Table 6) :

Table 6—Past Consumption and Projected Demand of Round Fresh Tomatoes 1955-70 (in imperial tons)

	1955	1960	1970
United Kingdom	311,000	318,000	350,000
Western Europe (excl. U.K.)	440,000	490,000	540,000
TOTAL	751,000	808,000	890,000

Two things to note about this table are :

1 Britain will be claiming proportionally less of available Western European supplies in the future ;

2 It infers that consumption of round tomatoes per person is higher in Britain than elsewhere in Northern Europe ; and if E.E.C. countries adopt the British year-round consumption pattern, future demand will be further increased. Take away from Britain's total the 120,000 tons obtained from Spain and the Canary Islands between October and March, and it can be shown that spring and summer consumption per head in Western Europe in 1970 will be practically equal to that in the United Kingdom today.

New Records in Vegetable Consumption

Although the British grower may feel nothing of it, the expanding market for early tomatoes is a reality (for instance, sales of glasshouse tomatoes in Britain during the eight weeks following May 1st, increased 10 per cent. in the four years 1957 to 1961), and the rising consumption will continue. The only question is: how far can it go? There is one good reason for not making projections much beyond, say, 1975, and it is this: in the past, the U.S.A. has always been held up as the model of what is possible in consumption, and so long as consumption in Europe was lower than in the U.S., observers were prepared to say that there was room for expansion. Now, however, continental Western Europe looks set to take over the running in vegetable consumption and to set the world record. High as it is, consumption per person in the U.S. has been stationary for almost a whole generation—it has stabilised at a level below that which western Europe expects to attain.

So there is no guide as to the level at which consumption in Western Europe will level off: all that can be said is that Dutch research work has shown that for vegetables as a whole there is still some scope—with, of course, better prospects for tomatoes than for the coarse vegetables. With a greater tradition of fruit and vegetables in their diets, European consumers will go on to surpass (in volume) American standards during the 1960's and 1970's. Thereafter future increments of wealth may induce further changes in diets, one of which would be the stabilisation of, and later the reduction of, purchases of some sorts of tomato. It could happen that at some date nearer the end of the century the ordinary individual's purchasing power will be high enough to command a diet in animal protein. When this occurs, the vegetable-eating which is a vestige of poverty in parts of Western Europe (as Dewhurst has shown in his comprehensive work *Europe's Needs and Resources*) will cease.

Potential Consumption of Early Tomatoes

Implicit in the pattern of demand in the future are a switch from lower-price buying to higher-price buying and a relatively greater consumption when prices are high. The 10 per cent. extra demand in Western Europe is certain to be shared between higher prices and higher consumption. There are all the signs that by 1970 an extra £5,500,000 to £7,000,000 a year (at today's value of money) will be available for tomatoes in the whole of Western Europe, and that the new spending will not be evened out over the entire season but will be directed largely towards early tomatoes.

In the United Kingdom some 105,000 tons of fresh tomatoes are bought each year during these three months. Thousands of continental Europeans already have higher per capita incomes than Britons, but Britain is still the main market for the first pickings

for all producers, whether in Holland, Guernsey or Britain itself. Demand in Germany has not hitherto started up in a big way until the third week of May, but there seems to be no reason why Western Germany, together with urban Italy and France, should not follow the British pattern and scale of consumption of early glasshouse tomatoes. Between 1955 and 1960, for example, the yearly uptake of tomatoes in continental Western Europe (excluding Italy) increased by 50,000 tons, Dutch growers providing two-thirds of this increase. English growers have been so "conditioned" to the menace of the Dutch tomato that they think first and foremost of their own market being "spoiled". On the larger, west European scale it is rather a question of new markets being "made".

When the continent has caught up with Britain, total West European consumption would rise to 300,000 tons for the three months when prices are highest. Not more than 30,000 tons could come from known outdoor areas in the time allowed, which leaves 270,000 tons—the produce of 10,000 acres of early heated houses —to be supplied by glasshouse growers. These estimates, however, are long-term, and if the glasshouse tomato industry does reach an elevated status of 10,000 acres or more, it is more likely to occur after 1970 than before.

Demand in 1970

Concentrating now on the next eight years (from 1962) and on the high-price period (April to June) which holds out the best prospects of increased demand, the forecast 10 per cent (actually 9.3 as an average) increase in overall West European demand for round tomatoes is fully consonant with a 12 or 13 per cent. increase in the high-price period. In this event the 170,000 tons of early round tomatoes consumed during 1960 in Western Europe (including Britain) will rise to 200,000 tons by 1970, with about 175,000 tons coming from heated houses. At present there are believed to be about 4,000 acres* planted early, and 2,650 acres planted later. It is hoped that progress in technique will ensure an *average* yield of 23.5 tons an acre before June 30th, in which case some 7,500 acres of early glasshouse crop would be required by 1970. Can this be realised? If it cannot, prices of early tomatoes will rise (and Guernsey growers and some English growers need not be so apprehensive about the future).

Sources of Supply

But where are the extra early tomatoes to come from? Consider the present main sources of supply. Among these there are only three growing-points, one large (South Holland, including the Flanders seaboard as far as North East France) and three which are small as yet (East Holland, South Western France and Jersey).

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* 500 *acres in United Kingdom ;* 750 *acres in Guernsey ;* 2.400 *acres in South Holland ;* 300 *acres elsewhere.*

The chronicle of sources presently important in Western Europe is as follows:

Area	*Annual production*† (000 *tons*)	*Production trend*
Netherlands ...	190,000	upward
Canary Isles ...	100,000	stationary
United Kingdom ...	85,000	downward
Guernsey	50,000	slightly downward
West Germany ...	35,000	downward
Spain	40,000	stationary
Jersey	20,000	slightly upward

† *rounded, c.*1961.

(It is too soon yet to evaluate the effect of the rising production in the Balkan States and in Yugoslavia: it is not anticipated that supplies from these sources will permeate Western Europe by 1970, although they may feature in some more easterly markets.)

Looking back, it will be seen how dependent upon Dutch growers Europe's consumers have become. And although it is popularly assumed that Dutch growers *will* provide the bulk of the further increase it does not necessarily follow as a matter of economic justice that they *should.*

The Acreage in Holland

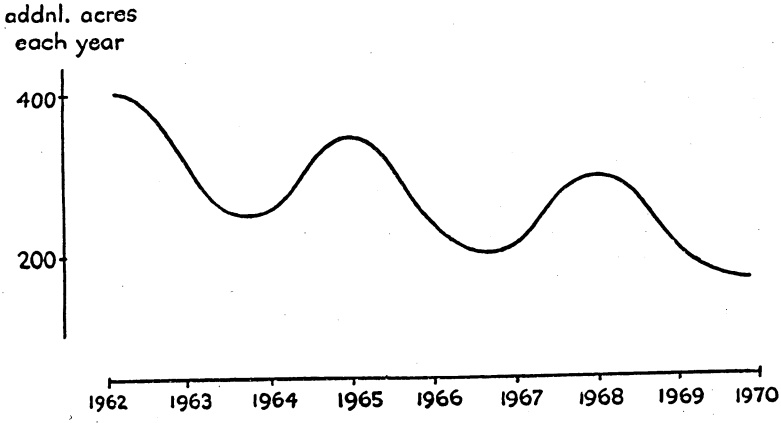
There are several factors weighing with a glasshouse grower before he decides to plant more early tomatoes. In the ordinary course of evolution tomatoes slowly give way to more intensive crops, so there is little hope that tomatoes can secure an increasing share of the heated glass already in existence. And as regards new houses, early tomatoes in a progressing economy makes only part of an enlarged demand for most glasshouse produce, including flowers, cucumbers and lettuce (but not grapes). In fact, a few Dutch growers are tending to lose interest in tomatoes, and progress in technique of production is thought to be slowing down. Add to this the facts that some of the labour for the crops in new houses will have to be bought away from other industries, that there is a limit to one man's capacity, and that more leisure will be the order of the day, it would seem that over the next eight years the rate of new additions to the heated glasshouse acreage in Holland will decline. The incentive to convert from cold house practice to heated house practice must, however, continue; but some of the converted houses will produce only second-early crops. Accepting that by 1970 the annual rate of accretion of heated houses for tomato growing by building will have fallen by half, with transference from cold house practice maintained, there may well be about 2,600 more acres of heated glass for tomatoes in 1970 than there were in 1960-62.

Dutch growers' profits on growing heated tomatoes are not the same each year: there is a periodicity, with one year of exceptionally good profits in every three years. A forecast of future movements in acreage can be made on this basis. Assuming (*a*) diminished incentive to re-invest in glass, and (*b*) reduced real annual surpluses, a hypothetical curve showing how the rate of increase may tail off so as to provide 2,600 more acres of heated tomatoes is given in Figure 3.

If there were to be a total of 2,500 to 2,700 acres more heated tomatoes 2,000 of this may be for early tomato crops, making some 4,500 acres in Holland alone. But withdrawals of houses and switches in cropping in other countries have to be allowed for, and in the end a total of 5,500 to 6,500 acres of early heated crop may be realised, out of a total area of tomatoes under glass of around 9,000 acres. The early crop was previously calculated to require 10,000 acres ultimately, and 7,500 acres by 1970.

FIGURE 3

Assumed course of increase in acreage of heated tomato houses in Holland



Future Level of Supply

Forecast supply of round tomatoes, therefore, appears to be measurably below forecast demand (at current prices) during most of the time of keenest demand (April to June). The presumption is that prices must rise for part of that period in order to trim demand to the supplies available. Any West European (including British) early grower, who can guarantee to keep his costs of production in line with changes in the value of money should not be in any less favourable position with a good, early tomato crop in 1970 than he is at present.

Dr. Kemmers (previously mentioned) advances arguments for a longer continuation of the present scale of expansion in Dutch tomato growing. He is quoted as follows, "I cannot fail to get the impression that under the circumstances described expansion will take place for a long time to come, even if the average yields of capital would fall below the present level . . . since the Dutch grower invests to make the following generation grow up into independent chiefs of businesses in horticulture, whereas an English grower seems to be led especially by direct consideration as regards yield of capital".

Only Holland, then, will have supplies that are commensurate with demand: Britain, Germany, Sweden, France and perhaps Italy will not have enough glasshouse tomatoes of their own, and buyers in Holland will be bidding for supplies to export to these countries: as supplies are forecast to be barely adequate, prices must be firm, and probably not below their real level of 1962.

Auction Prices of Tomatoes

An appreciation of the British growers' position in the West European market, protected as they are by the import duty, can be gained by considering how tomatoes are bought on the Dutch auctions. Before the phased reduction of tariffs internal to "the Six" began, Dutch tomatoes in the first half of the season sold at higher prices in Britain than in Germany, but the British duty was higher than the German and the difference in wholesale prices was about equivalent to the difference in duty. It still cost an exporter more, however, to send tomatoes to Britain than to Germany, and because his expected net realisation from sales in England was no higher than from Germany, he could not afford to pay as much at the auction for tomatoes to send to England as for those to send to Germany. That is, the wholesale price in Britain was about £25 a ton more than in West Germany, but the tariff was £25 a ton higher (£40 in Britain, £15 in Germany), and there was the handicap of £15 a ton on transport to Britain if normal channels of distribution were used. In short, a buyer for export to England would offer £15 a ton less than a buyer for export to Germany for tomatoes of equivalent quality.

Buying under these circumstances, exporters with cheaper means of transport to England, and large-scale buyers for England, may compete on equal terms with buyers for other countries; there will be an opportunity for "bargains" if the trade with Germany is "dull", and speculative buyers will take a chance on low-price consignments for Britain and elsewhere. It follows that if the original German tariff of £15 a ton disappears and the present English tariff is maintained, the handicap in export to England will be increased (to up to £30 a ton) and the volume of exports to England (if supplies tend to be scarce) must be smaller, or quality lower than otherwise, or else (if supplies tend to be

ample) the Dutch growers' price will be lower than otherwise, and the price delivered in the United Kingdom correspondingly low.

Could Britain now afford to take compensatory measures in the tomato tariff to offset this relatively greater handicap? If it is Britain's intention to join the European Economic Community eventually, there is a case for *not* allowing the import duty to be more protective than was intended. This case rests upon three considerations. First, that if protection is increased, the English industry will continue to be either larger or less efficient than is nationally desirable (and, as a by-product, thus slow down the rate of transference to flower-growing). Secondly, that as is shown in the next chapter, modified and modernised English practice can give results freely competitive with the Dutch (and it is the writer's submission that it is in this direction that glasshouse production should be moving). Thirdly, the higher the protective wall is at the start of its abolition, the larger the fall for the English grower. A marginal reduction in the rate of import duty might alarm some growers and deter a few, but it would not affect the grower who was confident that his plans would enable him to prosper even if the import duty were entirely removed.

Pricing under Free Trade

What would have happened if there had been free trade in tomatoes by 1970? With the £25 a ton differential in tariff between England and Germany removed, Dutch buyers for England would initially have been able to offer up to £10 a ton more (i.e. £25 higher delivered price—£15 a ton higher delivery cost) than buyers for Germany. Not having an import duty to pay, buyers thinking of export to England would "press the button' whilst the auction clock finger pointed to a higher price than was formerly the case. Accordingly, buyers for other countries, where demand is also keen, would find some of their usual supplies removed, and they too, would be inclined to buy at higher prices. In other words, prices on the auction would tend to rise, and Dutch growers' revenue to increase. Price levels in England, being partly set by at best a static volume of English and Guernsey tomatoes, would tend to be higher than where Dutch supplies are more in evidence, but competition among exporters is likely to cut to a minimum any consequential tendency for distributors' margins to increase. To take an example. The average auction price for the early crop at a given time may be £152 an imperial ton, made up of four-fifths purchases for Western Germany and elsewhere at £155 a ton, and one-fifth purchases for England at £140 a ton. With no import duty to pay, more sales at the auctions will take place at between £150 and £160 a ton. With a handicap of £15 a ton converted to an advantage of £10 a ton on, say, 20,000 tons for Britain, additional purchasing power of £500,000 will have been

added, making £15,500,000 available (for 100,000 tons) where formerly there was only £15m. The equilibrium price then becomes £155 a ton. The auction takes £5 a ton more for the whole supply than when the tariff was in force, but *the buyers* would pay £15 a ton more for tomatoes for Britain, so long as supply has not increased more than demand—and this is the condition which the previous analysis has shown to be the more likely.

If the above example is correct in principle, some of the "cost" of the British tariff will be transferred to the buying-point and the average wholesale price of early Dutch tomatoes in the U.K. markets would not fall by the amount of the tariff (4s. 3d. a 12-lb. chip) but by about 2s. 7½d. a chip, under the present demand and supply régime. Were prices on the auctions to react to the forecast 12 or 13 per cent increase in demand, prices delivered to U.K. wholesale markets might be about 2s. or 2s. 3d. a chip less than in 1960-61.

Dr. Kemmers has something to say on the subject of prices, too. He considers that prices of Dutch tomatoes on U.K. markets would be liable to fall by the full amount of the import duty if the import duty were removed. The liability would not be fully realised because attempts to buy more tomatoes for Britain at the auctions would leave other buyers short and of course prices would rise and restrain in turn the new wave of buying for Britain. There would be considerable restraint in fact, because Continental demand for Dutch tomatoes tends to be more constant, less elastic, than the English demand for Dutch tomatoes. Consequently, any degree of scarcity of supplies will tend to raise auction prices disproportionally, and delivered prices in the U.K. will be high. He writes: "If I try to weigh all these factors against each other, it is my impression that in case of abolition of the import duty, one-half of the consequent reduction in costs will favour the Dutch price level and that the price level of tomatoes in England will fall by the other half."

So in the end the quantitative result is close to the author's, and both estimates suggest, disregarding dynamic elements of change, that the price of Dutch tomatoes in England would for a start be between 2s. 4d. and 2s. a chip lower than at present during the first half of the season if the import duty were to be removed.

Chapter 4

HARMONIZING PRODUCERS' INTERESTS

Once it is accepted that the future facing producers of early tomatoes is not one of cut-throat competition for a limited market, it becomes possible to postulate ways in which their interests could be made complementary. That is, on what basis could a unified West European market be shared among producers in England, Guernsey and Holland : and what would be the outcome?

Political and Evolutionary Influences

This look into the future has shown expectations somewhat as follows :

1. Production of early tomatoes in the Netherlands will continue to increase, but more slowly. So long as the British import duty remains in force, continental demand for tomatoes early in the season would increase faster than in Britain, and tomato exports to Britain would increase less rapidly than in the past. Importation of early tomatoes will be encouraged if English and Guernsey growers continue to give up early tomato production.

2. If there were no tariff, Dutch tomatoes would be imported into Britain in greater volume, but the resulting fall in market price of English tomatoes would not be catastrophic. So long as quality is important in supply, time is on the side of the British grower.

These might be called the political influences on the future ; but there will also be economic evolutionary influences at work over a period of as long as eight years, and their effect will be as follows :

3. Producers' costs will continue to increase. Dutch growers will attempt to counter this tendency more than British growers by producing more tomatoes for sale in the high-price period, in response to the evolution in demand.
   Although in the long run producers' costs will tend to increase relative to prices of tomatoes, it could happen that for a period of five to ten years English consumers would increasingly ask for English tomatoes and English growers increasingly cease to grow them. Price premiums for English tomatoes must increase if that happens.

British Participation in the United Kingdom Market

Looking ahead to 1970, then, it seems likely that Dutch growers will continue to take over more of the English market—less quickly if the tariff remains, more quickly if it were to be

abolished. At the same time tomato-growing could be quite profitable for a limited number of English growers, even if of mixed efficiency.

If English growers do not concede a share of the market to Dutch growers, what can they do to compete? What parity with Dutch growers do English-speaking growers desire? What parity can they reasonably claim? Do they want costs in England brought into line with those in Holland? Do they seek an equivalent profit —and would it be profit per holding or profit per acre? Profits per acre from good early tomato practice are already higher in England and in Guernsey than the average in Holland.

The same prices for glasshouse fuel and for labour in England as in Holland would by no means equate costs of production, and would leave Dutch growers with substantial advantages of size of business, productivity of labour and complementary crops. Costs of production will not be a decisive factor, but it is worthwhile following them through to 1970. It can be asserted that Dutch growers must begin increasingly to experience some of the "prosperity sickness" which has affected growers in Britain. While there is not another "Lee Valley" situation in Holland, demands for land and labour from other users, and the attraction of other employment than in glasshouses, will be on an unprecedented scale. This is one reason for the relatively cautious estimates of increase in future acreage on page 31.

Production Costs in 1970

It is quite conceivable, then, that in 1970, Dutch growers will be paying 7s. an hour (inclusive of social benefits) for labour in South Holland, compared with 6s. 4d. in England and perhaps 6s. in Guernsey. Real profits per acre will have fallen, in spite of the increased demand and higher prices, although holdings will be larger and money incomes possibly sustained. If this were so, the present condition of £350 *output per* £100 *labour* realised in South Holland would have been reduced to £320-£325 by 1970: this rate of output is consistent with the grower producing a 40-ton crop realising £140 a ton on the farm, and paying £700 a year for a regular male employee. The notional middle cost of production for Dutch early tomatoes for 1970, compared with that for 1960, therefore, looks like this (Table 7):

Table 7—Computed Costs of Early Tomatoes in South Holland, 1960 and 1970

	1960 £ *per acre*	1970 £ *per acre*
Labour	1,160	1,550
Materials	1,550	1,700
Contract work ...	390	470
	3,100	3,720
Overhead costs ...	725	850
	3,825	4,570
Yield per acre ...	36 tons	40 tons
Cost per ton	£106	£114

It is possibly a coincidence that this notional Dutch middle cost per ton for 1970 is about where the English cost was in 1960. At once, there seems the prospect that if, by whatever means —higher yields, more mechanisation, more intensive use of glass, superior heat conversion, earlier cropping, or more catch cropping —English-speaking growers could either increase net returns more than costs or keep costs from rising (where there is paid labour), or will accept the same money rate of reward as today (on family holdings), between now and 1970, by that date they should have a unit cost of production similar to *the middle cost in Holland* without altering their present practices (although the Dutch growers might still be earlier in the market for the same cost). Protected by the import duty and his lower marketing-and-distribution cost, the grower in England could thus nearly accomplish his aim of income parity from a smaller business than the Dutch grower.

But for the distribution costs involved in moving Dutch produce to England, it would be marginally more economical of resources to build *new* glass in Holland than to work some of the existing glasshouses in England and Guernsey for the benefit of those consumers who do not discriminate between English, Guernsey and Dutch early tomatoes: for it is shown on page 49 that *direct* costs per acre in England (£4,836) and in Guernsey (£4,738) will on some holdings exceed *total costs* per acre in South Holland (£4,570).

Marketing and Distribution Costs

One reason why English growers can make profits from intrinsically less efficient holdings than the Dutch is that their distribution costs are so much less than the Dutch growers'. Marketing and distribution costs would add something like £350 an acre

to the cost of growing the Dutch early crop, and perhaps £600 an acre to the cost of the Guernsey crop, in excess of the cost of the English crop as delivered to the English wholesale market. With the import duty added the Dutch crop would have to carry about £1,550 an acre more deductions from English wholesale price than the English.

A wholesale-to-retail stage in distribution in the United Kingdom will not apply to all tomatoes sold, whether they originated in Holland, in Guernsey or in Britain ; but for comparative purposes it can be assumed that costs beyond the wholesale stage will be uniform, whereas prior to wholesale stage they will vary. Whilst admitting that there may be minor differences in retail mark-up, it is reasonable to start from a wholesale price and work calculations of cost back to the nursery.

Average deductions over the season for marketing and distribution services made between the wholesale market and the nursery would be somewhat as follows when the average wholesale price for English pink-and-whites was 1s. 6d. a lb. (Table 8) :

Table 8—Marketing and Distribution Costs for Early Tomatoes from Three Sources c. 1961

	Southern England		*Guernsey*		*South Holland*	
	cost per 12lb. unit					
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
U.K. market expenses ...	1	6½	1	5½	1	4½
Freight		5	2	2	2	0
Container		10				
Grading and packing ...		3½		6		–
Auction expenses ...		–		–		5†
	3	1	4	1½	3	9½
Import duty					4	3
	3	1	4	1½	8	0½
Approx. rate per acre ...	£1,585 (55 tons)		£2,290 (60 tons)		£3,139 (42 tons)	

Comparative Supply Prices

Further refinement may be added to the above figures to make them more appropriate to future situations, by taking into account (*a*) the lower pack-out in England and Guernsey, (*b*) the earlier

† *An inclusive charge: commission, transport and sizing (on the holding).*

bulking of the Guernsey crop, (*c*) the Dutch early-crop marketing season (finishing August 7th-10th), and (*d*) the increased premium on English produce, due to its relative scarcity. Let it be assumed that the premium for first-grade English tomatoes has risen to an average 3s. a chip at wholesale, and to 1s. 6d. for the Guernsey first-grade tomatoes ; secondly, that English and Guernsey growers pack out 70 per cent. of first grade, compared with 85 per cent. for Dutch growers ; and, thirdly, that the average wholesale price for English pink-and-whites over the early part of the season is 24s. 6d. a chip ; then the net returns most familiar to typical growers (supposing there are any) in each country would be :

	Average price at wholesale per unit of		*Average net returns 12 lbs.*	
	s.	*d.*	*s.*	*d.*
English practice ...	22	3	18	10
Guernsey „ ...	21	9	18	2
Dutch „ ...	20	6	12	3½

Proximity to market, then would mean something to the English grower so long as imported produce, too, has to pass through a wholesale market. But this degree of handicap on Dutch growers is already being reduced. It is thought that as much as half of the tomatoes now imported from Holland avoid the scheduled steamer services and travel more cheaply by small coasting vessels, which are either owned or chartered by exporters. Conceivably, the equivalent of the lost increase in import duty could be saved by this method of shipping. On the other hand, there may be a small advantage to the British grower accruing from the comparatively low average tomato prices in Germany : to the extent that exporters have to take lower margins in the German trade, they will have to seek to get higher margins in the English trade in order to keep up their incomes. At present, many exporters are thought to be using good margins on their other trading to finance in part very narrow margins on their English trade in tomatoes.

Equality of Performance with Dutch Growers

Projecting the typical English or Guernsey specialised practice to 1970, it seems that equality in *output per £100 labour* with middle-cost Dutch practice could be realised under any of the three conditions given below as examples :

with full maintenance of houses and heating system

(*a*) at 55 tons an acre and an average price on the holding of £180 a ton ;

(*b*) at 62 tons an acre and an average price on the holding of £150 a ton ;

(*c*) at 75 tons an acre and an average price on the holding of £145 a ton.

OR

without full maintenance (*i.e. a short term policy*)

(*d*) at 46 tons an acre and £155 a ton on the holding.

English-speaking growers may well question whether the level of average prices specified in (*a*) above can be realised when the period of marketing extends to seven months: these requirements however, could be reached both in yield and price by the short-season, good early crop averaging 18s. 10d. a chip net home instanced on page 40. Situations (*b*) and (*c*) could be reached by some specialised growers who can overcome the tendency for an early-bulking crop not to give a great weight of tomatoes during the year as a whole. The most destructive feature of these scheduled requirements for parity is their inaccessibility to "main crop" producers.

The task facing specialised growers has been given above. To this can be added specifications for two more types of holding whose efficiency would equal that of middle Dutch holdings:

(*a*) good family-type holdings with retail outlets (50-55 tons of early crop should suffice if the growers get a net wholesale price) ;

(*b*) tomatoes combined with other crops to give a revenue of not less than £750 an acre a month, over the year, tomatoes being called upon to do this for the period January to August inclusive.

Equality of Profit

Equality of profit between Dutch and non-Dutch tomato growers would not necessarily follow from similar performance in the houses. English-speaking growers' business costs tend to be higher than Dutch growers' and higher performance would be necessary for profit to be equal.

Fully to insure against the future, the English-speaking grower would have to know that he could obtain equality of profit in the absence of an import duty. If what has been written earlier about the effect of free trading in early tomatoes is correct, this step forward is not so hazardous as was once thought: but whereas *average* British practice cannot match up to the level of performance required, it does seem to be technically within the reach of good growers having medium-sized holdings, adaptable to mechanisation, on good sites in southern England.†

† *This statment should not be interpreted as a plea for the removal of the present tariff: the arguments presented concern a "new" industry, not the present one.*

Under the conditions quoted, short-crop growers would have to produce at less than £154 a ton, profit included ; for long-crop growers the maximum cost would be £120 a ton. Blueprints for each type of practice are given below.

Short season. Allowing seven months' labour, depreciation and business expenses for tomatoes, a possible production blueprint for 1970 is :

	£ *per acre*	
Labour	1,450	At a yield of 45 tons, cost per ton, at £140 is below the viable £154.
Fuel (heating)	1,450	
Materials	600	
Services (including sterilization)	360	
Business expenses	350	The minimum yield is close to 40 tons an acre.
Depreciation	360	
Interest on capital (12 months)	900	
Profit allowance	800	
	£6,270	

Long season. The blueprint for long season production is less straightforward, because estimates have to be made of tomato prices between August and October. Were there to be a significant removal of "main crop" production from the Lee Valley, summer prices for glasshouse tomatoes could be on a higher level than in the recent past. Table 9 shows what is required of specialised, or long season production if it is to allow the English-speaking growers the same money profit per ton as Dutch growers. In default of anything more precise, it has been assumed for the free-trading calculations, that the wholesale price in England would fall by half the amount of the tariff and the premium on English tomatoes would increase by 2d. a lb.

Apparently, both English growers and Guernsey growers would be faced with reducing costs per ton by £10* in this context in the event of free trading.

** Not more, because presumably their profits per ton are already higher than are many Dutch growers'.*

Table 9—The Economic Task Facing Specialised Growers

	(A) *with the present tariff in force*				(B) *with the tariff removed*			
	England		*Guernsey*		*England*		*Guernsey*	
	per unit of 12 lbs.							
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Average wholesale price in U.K. ...	18	10	18	4	17	6	17	0
Deduct for marketing and distribution costs	3	1	4	1½	2	10½	3	10½
Net price to grower ...	15	9	14	2½	14	7½	13	1½
Deduct for normal profit ...	1	10	1	10	1	10	1	10
Limiting cost of production ...	13	11	12	4½	12	9½	11	3½
Equivalent cost per ton ...	£130		£116		£120		£106	

The blueprint for specialised production comparable to that given previously for short-season production now becomes :

	£ per acre	
Labour	2,830	At a yield of 60 tons cost per ton is £135-£15 in excess of the viable level.
Fuel (heating)	1,550	
Materials	600	
Services (including sterilization)	480	
Business expenses	500	The minimum yield necessary is close to 68 tons.
Depreciation	450	
Interest on capital	900	
Profit allowance	800	
	£8,110	

This analysis shows long season production to be less viable than short-season production in a free-trading situation.

A Viable English Industry

On what basis should an international distribution of productive effort be awarded? Should *minimum aggregate cost* or *maximum aggregate profit* prevail? By an unfortunate mischance, in the public's mind, *minimum cost* seems appropriate to agricultural products, *maximum profit* to manufactured products. English

tomato growers, however, have much more to gain from a *profit* basis of association with western Europe than a *cost* basis. Only if early production were to be shared internationally with minimum cost in mind would Holland retain her overwhelming predominance in comparison with England and Guernsey.

In fact, if producers in the three communities were to adopt similar, efficient production methods, their respective situations assuming (*a*) free trading, and (*b*) costs and market prices as formerly calculated, would be as follows (Table 10):

Table 10—Comparative Economy of Supplying Early Tomatoes as a Short-Season Crop to the U.K. Market

	S. England		*Guernsey*		*S. Holland*	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
Average price realised at wholesale (per 12 lbs.) ...	19	11	19	6	18	3
Marketing costs (per 12 lbs.)	3	3	4	2	3	9
Grower's net return (per 12 lbs.)	16	8	15	4	14	6
Profit allowed (per 12 lbs.)	1	10	1	10	1	10
Allowable cost (per 12 lbs.) (excluding profit) ...	14	10	13	6	12	8
Equivalent cost per ton ...	£137		£126		£119	

Thus, after meeting a specified profit requirement for all producers, it seems that:

1. English growers could profitably produce a short-season early crop, because its unit cost would be less than the permissible economic limit of £137 a ton.
2. Guernsey growers could profitably produce a short-season early crop at a cost of not more than £126 a ton.
3. Dutch growers could profitably produce a short-season early crop at a cost of not more than £119 a ton.

Figure 4 shows how the annual cumulative cost curves for production of early tomatoes in Holland and in Guernsey would look when moved on to a 1970 cost scale and with production "cut off" by a "maximum allowable cost" line. The previous shape of curves has been retained for Guernsey and Holland. The Guernsey industry is not likely to change very much: new holdings are unlikely to oust the old, so a total change in efficiency is not to be anticipated. In Holland it is anticipated that new capacity will have been created, as the proportion of converted cold glass

is likely to increase relative to the proportion of new heated glass (for tomatoes), there will be no definite shift in efficiency within the next eight years. In the event of profit (within the limits allowed by non-monopolistic trading), becoming the arbiter of size of industry in each country there would be a marginal transference of acreage from Holland and from Guernsey to (southern) England as uneconomic production was cut off elsewhere. Apparently, about two-thirds of Dutch production and three-quarters of Guernsey production would be viable* under these conditions.

Pursuing this argument one stage further, a notional idea of the size of the early tomato industry in Britain, in the events described, can be had by assuming that United Kingdom consumers would be buying 120,000 tons of glasshouse tomatoes before the end of July, and that the "uneconomic" part of what Holland and Guernsey would normally supply is available to English growers within their tolerance of £137 a ton.

Allocation of Scheduled Profitable Production, 1970

	amount supplied
Holland: 70 per cent of 4,500 acres; 25 per cent to the U.K.; 40 tons an acre ...	31,500 tons
Guernsey: 72½ per cent of 40,000 tons ...	29,000 tons
England: a share of the balance; a maximum of 59,500 tons, at 45 tons an acre	1,320 acres

It emerges that English-speaking growers would be able to compete for a sizeable share of about 1,300 new acres, since Dutch production would not be an acceptable substitute for it. What is most remarkable about this look into the future is how unchanged in overall in size the English industry would be, although the rôle of early and late-crop practices is reversed.

To summarise this chapter:

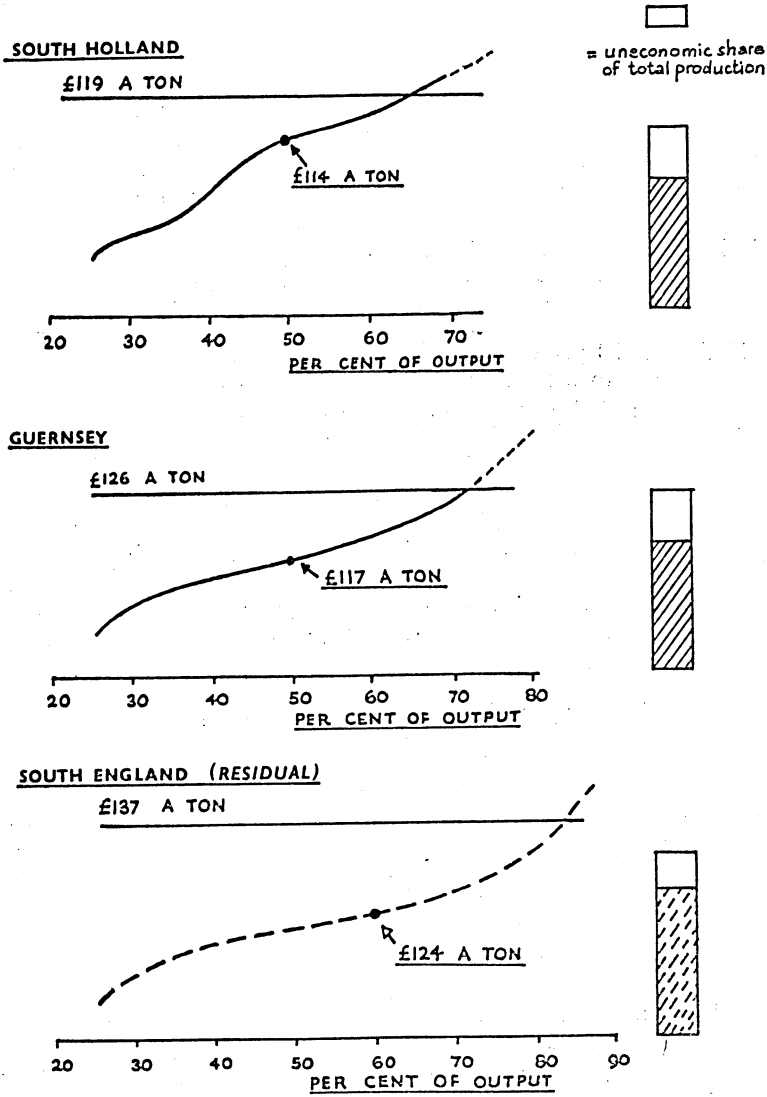
1. According to the definition of "fair" competition adopted, English growers can regain the largest share of supplying early tomatoes to markets in the United Kingdom during the period April to July inclusive, even without the protection of the present import duty. The worked examples show that cost per ton, including a normal profit from well-sited, well-equipped and well-managed holdings would be lower than the middle-range cost of Dutch production.
2. Successful competition with Dutch growers will be more easily achieved by growing a short-season crop than a long-season crop.

   Forty tons an acre by August 5th would seem to be more frequently attainable in Southern England than 61 tons an

** Presumably some part of the remainder could still pass to West Germany if the net returns therefrom were higher than those from the U.K.*

FIGURE 4

Assumed Cumulative Cost Curves for c.1970 in relation to maximum cost allowing iso-profit per ton; South England, Guernsey and South Holland



acre by November 30th, because the 61-ton long crop is equivalent (according to tests on three holdings) to 45 tons an acre by August 5th. Specialised production would have to be on a large scale to provide a grower with a good annual income.

3. Given uniformly high efficiency in new holdings, perhaps 40,000 tons, or almost 1,000 acres of early tomato production could be economically located in England, assuming trends in Guernsey and in Holland have been correctly interpreted and provided that the return on capital is satisfactory.

A Reconsideration of Findings

It is becoming evident now how Dutch growers have stolen a march on English growers by switching to early production (admittedly, largely under the stimulus of demand from West Germany). In the last five years the Dutch industry has grown away from the English industry, whose members—often wisely—have restrained themselves to peak production in June and July.

The Dutch early industry has no equivalent in England, although it was preceded by a section of the Guernsey industry. England has a mere 70 acres of early tomatoes in West Sussex, which is one of the most favourable areas. One main finding of this enquiry is that English growers could share with others in the supply of the additional early tomatoes that West European consumers will require in the next decade. At present, the mass demand in Germany is thought to be edging forward in the year, and may soon be felt before the middle of May.

When this new situation is understood it will be apparent that it will be hopeless to "tinker" with the present set-up. A more radical approach will be desirable, because a "new" industry is really what is required. Clearly, growers will continue to convert to flowers until the supply is increased to the level at which profit on investment is not significantly higher for flowers than for tomatoes*. Some English growers, then, could rightly take up early tomato production with every prospect of financial success; but, by definition, a new area of localised and specialised production is necessary because early production is not amenable to the same kind of dispersed production as main crop or "late" crop production.

Looked at dispassionately, British growers have been prone to nurture tomatoes somewhat lavishly, unless there are other advantages of light, climate or type of house which will permit the extra attention to have effect. If the plants' environment in Britain is

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* *In Holland, for example, the profit per unit of investment and per unit of cost in flower-growing is still higher than for heated or cold tomato growing.*

no better than in Holland, any additional work put into the plants is likely to go unrewarded because this one factor (work) alone cannot produce the extra yield required to pay for it so long as any other single element in the environment is a limiting factor—and either soil, temperature, light, or design of house could be a limiting factor. Unfortunately, it so happens that in the real world many British (i.e. England and Guernsey) tomato holdings are so small that intensive use of labour is the only practical policy—even though other factors combine to limit the fruits of that labour. If English growers insist on nurturing their tomatoes it will be good business for them to practise their art where they can get the maximum assistance from Nature.

Finally, this study has brought to light new aspects of international competition. It seems from this first examination of the west European market that the common concept of international competition is not strictly relevant to tomatoes. The consumer needs all the efficient producers there are, wherever they are. The real clash of interests is between the progressive grower who is prepared to work to expand the market and accept what that entails, and the quiescent-seeming grower who is not satisfied with the "status quo" but fears to disturb it.

Summary

In the last 15 years Dutch tomato growing has changed from dependence on summer tomatoes grown in cold houses to twice the area of predominantly heated houses which give earlier but much more expensive crops. The necessary investment to produce this change has been estimated at not less than £10 million. On many farms the Dutch light area has been given up so as to make room for the new heated houses (Table 1). Finance for the development seems to have come partly from credit: credit is part of the pattern of business in Holland, and in the typical case one third of the capital employed consists of loans. Proprietors were also able to make large scale re-investment from the cash surpluses occurring in the form of unpaid depreciation, interest on capital and family effort. It is estimated that cash retained by the proprietor on the average farm was 60% greater in 1961 than in 1955 (Figure 1). True profits have not been high enough to finance the expansion (Table 4).

Documentation of production costs is weak for England, good for Guernsey and excellent for Holland. A comparison of costs has been attempted, using cost accounting methods. Holland is seen to have about 40 per cent. of most efficient farms, but about one third are no more efficient than the average in Guernsey or in England. Low labour cost and high overheads are features of Dutch production (Table 5). The large business and the family structure of the Dutch farms make economically strong production units.

Examination of the market for the future indicates that the demand for early tomatoes will increase by 12 to 13 per cent between 1962 and 1970. It is questionable whether the Dutch industry, which is the only large tomato industry in western Europe that is expanding, can continue to provide all the extra tomatoes required. Holland's further economic growth is likely to curtail labour for horticulture and may interfere with further expansion. It is concluded that there may be a shortage of capacity leading to a rise in price on the auctions (page 33). Two independent opinions quote 2s. 3d. per unit of 5.45 kg. as the likely fall in price of early tomatoes on the English market if the import duty were suddenly removed.

Considering the normal cost of transporting Dutch tomatoes to Britain, and the price premium to be expected as good English tomatoes become scarcer, there seems to be a future for early tomatoes in Britain. In fact, it can be shown that, if producers were required to make a specified profit per ton, about one-third of Dutch tomatoes would be cut off, and an early crop of 40 tons an acre over a short season would give an English grower the same profit as a Dutch grower even if imported produce were free of duty (page 42). Long season, specialised production, which is normal English practice, is shown to need the protection of a tariff (Table 9).

Zusammenfassung

Während der letzten fünfzehn Jahre hat sich in Holland der Anbau von Tomaten gewandelt. Man ist von Sommer-Tomaten, die in ungeheizten Gewächshäusern gezogen wurden, auf vorwiegend geheizte Treibhäuser übergengangen. Die Anbaufläche hat sich verdoppelt. Die Tomaten reifen früher, aber sie erzielen viel höhere Preise. Um diese Umstellung zu bewerkstelligen, müssen nach Schätzungen nicht weniger als £.10 Millionen investiert werden. Auf vielen Gütern ist der Flächenraum, der für die "Holländer Fenster" benutzt wurde, aufgegeben worden, um für die neuen Gewächshäuser Raum zu schaffen. (Tabelle 1). Die Finanzierung dieser neuen Anlage scheint teilweise mit Krediten durchgeführt worden zu sein. Kredit ist in Holland geschäftsüblich, und in diesem typischen Fall besteht ein Drittel des aufgewandten Kapitals in Anleihen. Die Eigentümer konnten auch grosszügige Neu-Investierungen aus Ueberschüssen von Abschreibungen, für die sie natürlich nicht zu zahlen brauchten, und aus Kapital-Zinsen machen, abgesehen von allgemeiner finanzieller Familien Hilfe. Man schätzt, dass der Ertrag, der dem Inhaber einer Farm von durchschnittlicher Grösse blieb, im Jahre 1961 60% höher war als im Jahre 1955. (Figur 1). Der Reingewinn war nicht hoch genug, um die Umstellung und Ausdehnung zu finanzieren. (Tabelle 4).

Die Dokumentierung an Herstellungskoten ist für England schwach, gut für Guernsey und ausgezeichnet für Holland. Ein Vergleich der Kosten ist mit Kosten - Berechnungs - Methoden angestrebt worden. Holland hat ungefähr 40% höchst leistungsfähiger Farmen, aber etwa ein Drittel sind nicht produktiver als der Durchschnitt in Guernsey oder in England. Niedrige Löhne und hohe allgemeine Unkosten sind charakteristische Merkmale der holländischen Produktion ; (Tabelle 5). Die grossen Güter und die Familien Struktur der holländischen Farmen bilden ökonomisch eine starke Produktions Einheit.

Wenn man die Aussichten für die Zukunft des Marktes prüft, kann man annehmen, dass die Nachfrage nach frühen Tomaten zwischen 1962 und 1970 um 12% bis 13% zunehmen wird. Es erscheint fraglich, ob die holländische Industrie—die einzige grosse Tomaten Industrie in West-Europa, die im Wachsen begriffen ist —weiter die zunehmende Nachfrage nach Tomaten befriedigen kann. Hollands aufsteigende wirtschaftliche Entwicklung wird wahrscheinlich eine Knappheit an landwirtschaftlichen Arbeitern mit sich bringen und eine weitere Zunahme der Tomaten Produktion schwierig machen. Man folgert daraus, dass eine Produktions-Abnahme eintreten mag, die zu erhöhten Preisen auf den Auktionen führen könnte. (S.33). Zwei unabhängige Gutachten zitieren 2s. 3d. per Einheit von 5.45kg. als die wahrscheinliche Preis Abnahme für frühe Tomaten auf dem englischen Markt, wenn der Einfuhr-Zoll plötzlich aufgehoben werden sollte.

Wenn man die normalen Kosten für den Transport von holländischen Tomaten nach Gross-Britannien in Betracht zieht, und da man erwarten kann, dass gute englische Tomaten knapper werden und im Preis steigen, scheint in Gross-Britannien eine Zukunft für frühe Tomaten zu existieren. Tatsächlich kann man beweisen, dass—wenn Züchter einen spezifizierten Nutzen machen müssten—ungefähr ein Drittel der holländischen Tomaten nicht mehr importiert würden, und dass eine frühe Ernte von 40 Tonnen per "acre" in einer kurzen Saison einem englischen Züchter den gleichen Nutzen geben würd wie einem holländischen Züchter, selbst wenn importierte Tomaten zollfrei wären. (S.42). Lange Saison, spezialisierter Anbau—das Uebliche in England—brauchen, wie sich gezeigt hat, einen Schutz-Zoll. (Tabelle 9).

Résumé

La production hollandaise est caractérisée par une main-d'œuvre à prix bas et par des frais géneraux hauts (v. tab. 5). L'organisation importante et familiale des exploitations hollandaise entretient les entités productrices économiquement fortes.

La prospection des perspectives du marché indique que la demande des tomates précoces s'accroîtra de 12-13% entre 1962 et 1970. Il est douteux que l'industrie hollandaise, qui représente la seule en Europe occidentale qui soit en train de s'étendre, puisse continuer à fournir toutes les tomates précoces dont il y aura besoin. Il est probable que l'extension du développement économique de l'Hollande diminuera la main-d'œuvre disponible à l'horticulture, et qu'elle interviendra auprès de son extension ultérieure. On déduit qu'une capacité productrice réduite pourrait survenir, ce qui provoquerait un accroissement de prix aux enchères (v. p.33). Deux autorités indépendentes citent un abaissement probable de 2s. 3d. par unité de 5,45 kg. du prix des tomates précoces au marché anglais, si le droit d'importation fût subitement abrogé.

Compte tenu du frais normal du transport des tomates hollandaises à la Grande Bretagne, et de la prime de prix qu'on peut espérer à mesure que l'approvisionnement des tomates anglais de bonne qualité se ralentit, il paraît exister un avenir pour les tomates précoces en Grande Bretagne. Il est démontrable, en effet, que s'il serait obligatoire aux producteurs de bénéficier d'une somme précise par tonneau, environ le tiers des tomates hollandaises seraient exclues, et une récolte précoce de 40 tonneaux par acre pendant une saison réduite fournirait un profit égal à l'exploitant anglais qu'à celui hollandais, même si les produits importés seraient exempts de droits (v. p.42). La production specialisée à saison étendue, ce qui se pratique en Angleterre, se montre d'avoir besoin de la protection d'un tarif.

The translations were kindly undertaken by the Commonwealth Bureau of Horticulture and Plantation Crops.

Appendix I

Derivation of an Annual Cost Curve for English Early Tomatoes

The following initial breakdown of the glasshouse tomato acreage seems consonant with the volume of supplies marketed during each week of the season, with what is known about the use of glasshouses, and with known rates of development of cropping after planting:

1. 500 acres: early —planted prior to February 20th
2. 650 acres: main crop—planted February 21st to mid-March
3. 500 acres: late —planted mid-March to mid-April
4. 500 acres: cold —planted mid-April to end April

If it be further assumed that one-third of the area both of early crops and main crops is specialised, one-third shared in rotation with a much subsidising crop, and one third shared *pro rata* with other crops in the houses, the material for the cost curve for "heated" tomatoes emerges as:

	Costs per acre	*Yields per acre*	*Costs per ton*
Early crop	£6,000-7,750	45-70 tons	£133-111
Main crop	£5,500-6,500	40-60 tons	£137-108
Late crop	£4,000-5,000	28-40 tons	£120-125

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