The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Cucumbers - Cost & prod.

THE UNIVERSITY OF LEEDS

Department of Agricultural Economics

GIANNINI FOUNDATION OF AGRICULTURAL ECONOMICS LIBRARY

APR 19 1974

WITHDRAWN

Economic Aspects of Cucumber Production and Marketing in Britain

by
Richard A. Giles

Agricultural Enterprise Studies in England and Wales
Economic Report No. 14
February 1973
Price Fifty Pence

THE UNIVERSITY OF LEEDS

Department of Agricultural Economics

Economic Aspects of Cucumber Production and Marketing in Britain

(including a Survey of the 1969 and 1970 crops in the East Riding of Yorkshire)

by

Richard A. Giles

Agricultural Enterprise Studies in England and Wales

ECONOMIC REPORT No. 14

FEBRUARY 1973

PRICE: FIFTY PENCE

AGRICULTURAL ENTERPRISE STUDIES IN ENGLAND AND WALES

University departments of Agricultural Economics in England and Wales have for many years undertaken economic studies of crop and livestock enterprises. In this work the departments receive financial and technical support from the Ministry of Agriculture, Fisheries and Food.

A recent development is that departments in different regions of the country are now conducting joint studies into those enterprises in which they have a particular interest. This community of interest is being recognised by issuing enterprise reports in a common series entitled "Agricultural Enterprise Studies in England and Wales", although the publications will continue to be prepared and published by individual departments.

Titles of recent publications in this series and the addresses of the University departments are given at the end of this report.

FOREWORD

Although this report is entitled "Economic aspects of cucumber production and marketing in Britain", it does in fact contain statistical data and comment which applies variously to the United Kingdom, Great Britain and England and Wales. Such topics as tariff protection and the European Economic Community are relevant to the U.K. as a whole, and trade statistics are collected on this basis. The bulk of home production statistics however, refer only to England and Wales and the small areas of production elsewhere in the U.K. are ignored. Consumption statistics as derived from the National Food Survey refer to Great Britain only. It is hoped that this inevitable confusion in the statistics used for illustration will not cloud the more important issues.

Chapter 1 of the report describes briefly the relevance and purpose of the study, and how the survey described in chapter 5 was started. Chapter 2 examines the demand for cucumbers in the U.K., based mainly on statistics collected by the National Food Survey. Chapter 3 shows how the demand is met by a combination of home produced and imported cucumbers. The breakdown of supplies by source is examined on an annual basis and by time of arrival through the year. The recent appearance of supplies from Eastern Europe is briefly discussed and some comment included on the likely impact on the pattern of supplies, of Britain's entry into the E.E.C. Chapter 4 examines home production in terms of acreage (and location) and prices received for the product. A section is included which describes the operation of the compulsory grading scheme for cucumbers. Chapter 5 describes the results of the survey of cucumber production on a sample of East Riding holdings in 1969 and 1970. General aspects of cucumber growing in the area are followed by specific physical data relating to the survey sample. The management of the cucumber crop is examined and details of physical inputs and growing procedures included. Average costs of inputs are detailed, followed by a section on the physical output or yield of the crop. The marketing of cucumbers on the sample holdings is then examined, and when price information is added to yields, it is possible to compute average net returns for the crop. After discussing the pattern of production or sendings to market through the season, estimated production cost and return structures are devised for the heated and unheated crops in the area. Chapter 6 compares and contrasts the East Riding with the Lea Valley, the main concentration of cucumber production in the U.K., whilst chapter 7 looks briefly to the future.

The production of the "Agricultural Enterprise Studies in England and Wales" series of reports depends on the assistance given by the Agricultural and Horticultural Industry, and the Department of Agricultural Economics of the University of Leeds is indebted to the 25 growers in the East Riding who provided the information which forms the basis of chapters 5 to 7 of this report. A number of individuals in the following bodies or organisations have provided additional statistics which have made it possible to expand the scope of the report and collect together a large amount of information about cucumbers which is not available elsewhere in one document: Ministry of Agriculture, Fisheries & Food: Economics Division, Horticulture Division, National Food Survey Branch and Agricultural Development and Advisory Service (Yorkshire and Lancashire Region); H.M. Customs and Excise: Statistical Office; The University of Reading: Department of Agricultural Economics; National Economic Development Office: Agriculture E.D.C.

CONTENTS

FIGURES

TABLES

CHAPTER 1

INTRODUCTION

Cucumber production and marketing in this country has seen many changes in the past ten years. Great advances have been made in the technology of growing the crop and advances in plant breeding have produced a whole new generation of commercial varieties which have done much to reduce the faults and limitations of the standard varieties of a decade ago.

The seasonal pattern of supplies has changed both internally and internationally. In "Horticulture in Britain" published in 1967,[1] Ellis discussed the main production areas for cucumbers, which at the time of writing were confined to the South of the country. Then and now, the Lea Valley lingered on as the one big concentration of glasshouse cropping in the country. Devon was the only other area cited as an expanding area of cucumber production. What has altered the picture dramatically has been the emergence of Humberside as an aggressive and expanding cucumber production area. Our overseas suppliers have been chiefly the Dutch, who compete over approximately the same season as home growers, and the Canary Islands, who supply our out-of-season requirements. The first rumble of "things to come" was heard in the early 1960's when large contracts were placed by the Hungarians, Bulgarians and Rumanians with Western European glasshouse firms. These tremendous new areas of glass were obviously destined to produce exports and the badly needed foreign exchange with which the communist countries could buy Western European equipment, plant and technology.[2,3] In the late 1960's the first consignments of glasshouse produce from Eastern Europe began to arrive, aided enormously by advances in rapid transportation methods – particularly the development of container lorries and "roll-on, roll-off" facilities in Western European ports.

The situation has become very dynamic indeed, and in the race to keep up with developments in production and distribution methods, home producers, aided by the capital injections of the Horticultural Improvement Scheme and the positive encouragement by Government of the development of co-operation, have shown that they have the necessary commercial confidence in the future of cucumber production in this country.

The series of Agricultural Enterprise Studies in England and Wales, carried out by the Universities with finance provided by the Ministry of Agriculture, Fisheries and Food, are designed to monitor these very rapid changes in the technology and economics of the production and marketing of the main agricultural and horticultural crops. The studies are aimed at taking an "across-the-board" look at the current state of the arts and economic health of these various sectors of the industry, and in 1969, the University of Reading began a study of cucumber production primarily in the Lea Valley, with the inclusion of some holdings in the new high-technology glasshouse areas of the south coast.[4]

Due to other commitments it was not possible for the University of Leeds to begin a parallel study of cucumber growing in the East Riding at the same time. In a survey of the East Riding in 1966, Hales[5] obtained yield and margin data from 17 growers, representing 18.7 acres out of the then East Riding total of 31 acres of cucumbers. In 1969 and 1970, the acreage had risen to 75-80 acres, but the survey samples of 12 and 19 growers grew less than 9 acres of the total. It is the writer's contention that this decline in co-operation (every cucumber-grower with more than 700 sq.ft. of the crop was approached) is due to the great increase in demand on farmers' and growers' time in recent years for surveys and "form-filling" both statutory and otherwise. A major setback to the current study was the corporate decision of the Humber Growers' organisation not to participate. Many calls on their time and patience have been made in recent years and it is perhaps understandable though regrettable that they decided to decline on this occasion. This study cannot be claimed in consequence, to represent accurately an across-the-board picture of cucumber growing in the East Riding. Several large and efficient growers, representative of the best practice in the county did however participate, although the great majority of co-operators were small-scale, and the total results are therefore biassed to some extent.

(1) Ellis, P.G. (1967). "Horticulture in Britain". Part I, Vegetables. M.A.F.F., H.M.S.O., London.
(2) Shepherd, F.W. (Nov. 1970). "Horticulture in Rumania". Agriculture, Vol. 77, No. 11.
(3) Bullen, E.R. (June 1971). "Livestock in Rumania". Agriculture, Vol. 78, No. 6.
(4) Gill, A.H. (Nov. 1970). "Cucumber Production in the Lea Valley, 1969". University of Reading, Department of Agricultural Economics and Management. Agricultural Enterprise Studies in England and Wales, Report No. 2.
(5) "Cucumber Production in the East Riding of Yorkshire, 1966". University of Leeds, Department of Agricultural Economics, August 1968.

CHAPTER 2

DEMAND AND CONSUMPTION OF CUCUMBERS

Information about household food consumption and expenditure in this country is collected by the National Food Survey and published in the annual reports of the National Food Survey Committee.(1) Summarised data is published as it becomes available in the monthly Digest of Statistics.(2) Information about cucumber consumption and expenditure was not, however, separately analysed in the annual reports until 1966, and the monthly Digest refers only to "fresh green vegetables" and "other vegetables".

Although being the chief source of consumption and expenditure data in this country, it is important to remember that the National Food Survey is limited to Households only. A greatly increasing portion of the Nation's food is being consumed away from the home – in schools, restaurants, cafes and the like, and at the present time the N.F.S. take no account of these places. Because of these changes mentioned, a strong case can be made for the N.F.S. to be expanded to cover "institutional and other" eating establishments.

During the war years, consumption of cucumbers was severely curtailed when commercial glasshouses were directed to mainly tomato production, but at the time some compensatory expansion in outdoor production took place. Following the end of the war, demand was so strong that prices quadrupled in 1947 and a great expansion in glasshouse production took place. The expansion lead to a depression in prices, and area of crop took several years to settle down until a position was reached where prices remained stable at a fairly high level.

Cucumbers are consumed fresh in this country (with the exception of gherkins in pickled form) mainly in salads but also as a convenient filling for sandwiches. Some changes in eating habits for fresh salads have taken place, particularly in the past five years, which has lead to a much greater variety of salad vegetables being available in the shops, for most of the year. We have even reached the stage now, when innovations such as Capsicum or Green Peppers are being produced in some quantity under glass in the U.K. and development work on a number of other new lines is being pursued by the Experimental Stations of the Agricultural Development and Advisory Service. Whilst consumer expenditure on salads as a semi-luxury food has probably expanded – particularly due to the extension of the period of the year in which salads are consumed, cucumbers as an individual item have faced strong competition from the increasing variety and availability of other salad vegetables. Of all the commonly used salad vegetables, those with strong flavours such as onions and garlic have certain obvious limitations in widespread and expanding consumption, whilst cucumbers, particularly amongst the middle-aged and elderly are widely believed to have certain digestive disadvantages.

Table 1 illustrates data on household consumption of cucumbers for the four quarters of the year, extracted from the annual reports of the N.F.S. As one might expect, the late summer is the period of highest consumption, followed by late spring/early summer. No real trend is apparent in average annual consumption, as a roughly rising consumption from 1967-71 is apparently negated by a high consumption in 1966. It is a pity that data is not available for the years before 1966 as some indication of the reasons for the high 1966 figure might then become apparent. Only one reasonably clear series emerges, and that is for consumption in the last 3 months of the year, which has been rising steadily since 1966.

(1) "Domestic Food Consumption and Expenditure" Annual Report of the National Food Survey Committee. H.M.S.O.
(2) "Monthly Digest of Statistics" Central Statistical Office. H.M.S.O.

Table 1

Household consumption of cucumbers 1966-71

(ounces/person/week)

	1966	1967	1968	1969	1970	1971	Mean
January – March	0.30	0.27	0.28	0.28	0.27	0.27	0.28
April – June	1.18	0.84	1.06	1.04	1.21	1.11	1.07
July – September	1.16	0.93	1.03	1.19	1.13	1.17	1.10
October – December	0.28	0.22	0.31	0.37	0.41	0.46	0.34
Yearly average	0.73	0.56	0.67	0.72	0.76	0.75	0.70
Purchases	0.69	0.54	0.65	0.66	0.73	0.71	0.66

Note: The difference between "Purchases" and "Yearly Average Consumption" represents produce grown at home and/or received as gifts.

Source: National Food Survey

The writer holds the unremarkable theory that consumption of salads away from the home has been increasing in recent years. As an adjunct to the domestic consumption data of the N.F.S. and in the absence of published statistics regarding institutional catering, information was supplied by the Bursar's Office of the University of Leeds which supported the above theory and underlined the increasing importance of salads as a main item of catering in a large British University (Table 2). It was however not possible to isolate the contribution of cucumbers to the total makeup of salad meals, but the assumption is made, rightly or wrongly that the pro rata share of cucumbers remained the same over the five year period of table 2.

Table 2

Contribution of salads to total meal provision

University of Leeds: Student Catering 1967-72

	All lunches		Salads		Salads as % of all lunches		Student Population*
	Number	£	Number	£	Number	£	
1967/68	243212	44425	74418	11940	30.7	26.9	8043
1968/69	196638	37916	75191	13100	38.2	34.5	8411
1969/70	173361	33035	70230	12151	40.5	36.8	8475
1970/71	169930	33544	76795	14473	45.0	43.2	8764
1971/72	182821	39500	83797	17785	45.8	45.0	9348

Note: Figures do not include vacations, evening meals or sandwiches and snacks. 1971/72 Student population as at 31/10/71.

Sources: University of Leeds: Bursar's Office (Ancillary Services)
*University of Leeds Annual Report

As mentioned earlier, the N.F.S. covers only consumption by households and in a relatively small sample (around 8,000 households out of a total of nearly 17 million in 1968). As a cross-check therefore, an alternative consumption index was derived by dividing estimated total U.K. supplies of cucumbers by the Registrar-General's mid-yearly estimates of population. The results of this calculation as can be seen in table 3 are gratifyingly close to the N.F.S. results, although year to year changes are by no means in step. The table also contains two additional years of estimated consumption over that available from the N.F.S., further years being unavailable because of a change in the basis of collection of M.A.F.F. statistics giving a non-comparable series of data prior to 1964. One might have expected that the consumption data thus calculated would have been consistently slightly in excess of the household N.F.S. data on cucumbers

consumed in institutional and commercial establishments would have been covered. Two factors would however obscure this measure of additional consumption:–

(i) M.A.F.F. production data may ignore some production of cucumbers on a small scale.

(ii) The population estimates became slightly inflated towards the end of the series, this is evidenced by the 1971 census total population figure of 55,566,000. Although the Scottish component of the annual estimates was corrected in the light of the 1971 census, those for England, Wales and Northern Ireland were not.

Table 3

U.K. annual average and weekly consumption of cucumbers derived from population, home production and import estimates

		1964	1965	1966	1967	1968	1969	1970
Home Production	('000 tons)	32.5	35.3	32.1	33.6	32.2	33.5	32.9
Imports	('000 tons)	19.2	20.4	22.8	25.4	25.4	26.0	26.0
TOTAL	('000 tons)	51.7	55.7	54.9	59.0	57.6	59.5	57.7
Population	('000)	54010	54367	54664	54989	55295	55548	55726
lbs/head/year		2.144	2.295	2.250	2.403	2.333	2.399	2.319
ozs/head/week		0.660	0.707	0.693	0.740	0.719	0.739	0.714
N.F.S. ozs/head/week		n.a.	n.a.	0.73	0.56	0.76	0.72	0.76

Sources: M.A.F.F. Statistics
Registrar-General's mid-year population estimates
National Food Survey

The net effect of these two factors would be to slightly understate the derived consumption figures, particularly towards the end of the series.

The N.F.S. does throw some light on variations in consumption per head in the main regions of the country. Local shortfalls in production or importation can contribute to this variation as also could localised over-production. By taking a mean of several years data however, an indication of the basic preferences or dislikes of a particular region for cucumbers, can be derived. This information is shown in table 4.

Table 4

Regional variation in consumption of cucumbers U.K. 1966-71

(oz/person/week)

	1966	1967	1968	1969	1970	1971	Mean
All Households	0.73	0.56	0.67	0.72	0.76	0.75	0.70
Wales	0.66	0.53	0.34	0.58	0.86	0.82	0.63
Scotland	0.20	0.12	0.16	0.21	0.15	0.21	0.18
North	0.41	0.26	0.32	0.45	0.43	0.45	0.39
Yorks/Humber	0.69	0.44	0.60	0.60	0.76	0.44	0.59
N. West	0.31	0.26	0.40	0.34	0.29	0.40	0.33
E. Midlands	0.74	0.67	0.84	0.86	0.79	0.94	0.81
W. Midlands	0.77	0.51	0.63	0.84	0.95	0.78	0.75
S. West	0.64	0.72	0.82	0.88	0.80	0.77	0.77
S.E./E. Anglia	1.15	0.96	1.05	1.66	1.14	1.16	1.10

Source: National Food Survey

It would appear that Scottish consumers do not regard cucumbers as a regular part of their diet, and in fact eat only one for every six eaten in the South-east of the country. Insofar as cucumbers might still be regarded as a luxury food, their consumption appears to be linked with the general industrial prosperity of the region in which consumers live, the wealthier areas of the midlands and the south eating more than the comparatively depressed areas of the north. The data for Wales show considerable fluctuation from a low of 0.34 in 1968 to a high 0.86 in 1970. If industrial prosperity (and in consequence average disposable income per head) is an important factor, then the recovery of Welsh consumption levels since 1969 might be attributed to the success with which new industries have been attracted to mid- and south Wales. Even cucumber growers, therefore, might need to take account of changing regional economic fortunes. Part of the task of this report is to compare and contrast the two main cucumber production areas of the country, the Lea Valley and the East Riding of Yorkshire. From a consumption standpoint the cards are stacked in favour of Lea Valley growers, whose immediate hinterland contains some of the more prosperous consumers of the country. The "doorstep" market of northern producers is smaller and less prosperous. The East and West Midland industrial areas with their comparatively high per capita consumption constitute something of a commercial frontier between the two production areas, and might be regarded as an area where the two can compete on equal terms. For the lucrative southern market, however, Yorkshire growers must surmount the penalties of distance and high transport costs – a situation which must improve as priority is given to the improvement and new construction of trunk routes at the expense of the shorter and lower priority roads over which much of Lea Valley produce must travel.

There would appear to be some link between consumption and degree of concentration of population as illustrated by table 5.

Table 5

U.K. consumption of cucumbers according to population density. 1966-71

(oz/person/week)

			1966	1967	1968	1969	1970	1971	Mean
Conurbations	(i)	London	1.10	1.03	1.06	1.07	1.09	1.27	1.10
	(ii)	Provinces	0.55	0.32	0.46	0.38	0.43	0.42	0.43
Other urban areas	(i)	Large towns	0.76	0.48	0.52	0.61	0.67	0.72	0.63
	(ii)	Small towns	0.52	0.58	0.76	0.88	1.00	0.70	0.74
Semi-rural			0.79	0.62	0.74	0.84	0.78	0.78	0.76
Rural			0.61	0.42	0.58	0.64	0.66	0.76	0.61

Source: National Food Survey

It might be deduced that the less concentrated the population then the higher is the level of domestic consumption of cucumbers, provincial conurbations having a mean consumption level of 0.43 ozs, whilst semi-rural areas have a level of 0.76, with concentration within that scale having a steadily increasing level. At the two extremes however, London and the rural areas, this trend is not followed. This apparent perversity might be explained by the confounding effect of the regionalism instanced in table 4. The dominating effect of high south-eastern consumption shows up in the high London figure. Whilst the low rural consumption might be influenced by the predominance of these areas in the northern regions.

Calculations of elasticity of demand from N.F.S. data offer further interesting information. The income elasticity of demand for a commodity measures the reaction of consumers in terms of expenditure or quantity purchased, to a change in incomes, all other factors such as price of the commodity, remaining the same. Income elasticity is expressed as:

$$\frac{\text{The \% change in expenditure on the commodity (or quantity purchased)}}{\text{The \% change in income}}$$

Table 6 contains income elasticities of expenditure and of quantity purchased, for cucumbers, tomatoes and mushrooms.

Until 1965, cucumbers and mushrooms were aggregated in the calculation, but it can be seen that whilst mushrooms have remained comparatively a luxury item, cucumbers are now no longer so. Tomatoes, further, are seen to be very much a commonplace item with a low "luxury rating". For a certain increase in consumer incomes a fairly high proportion will be spent on mushrooms, a lesser amount on cucumbers and even less, on tomatoes. The position of these fresh foods as luxury items is underlined by comparison with the Income elasticities of expenditure on All Household Foods in table 6.

Table 6

Income elasticity (E) of demand for selected fresh produce

	1955	1958	1960	1962	1965	1967	1969	1971
Income E. Expenditure								
Mushrooms	1.10	1.14	1.04	0.96	0.90	0.99	0.86	0.92
Cucumbers						0.68	0.53	0.76
Tomatoes	0.55	0.46	0.44	0.45	0.42	0.40	0.37	0.28
All Household Foods[1]	0.30	0.28	0.25	0.27	0.23	0.20	0.20	0.20
Income E. Quantity Purchased								
Mushrooms	0.93	1.00	0.82	0.84	0.85	1.03	1.00	0.93
Cucumbers						0.70	0.48	0.70
Tomatoes	0.53	0.45	0.43	0.47	0.44	0.41	0.35	0.27

(1) See Table 1 of "Household Food Consumption and Expenditure: 1970 and 1971". Source: National Food Survey.

CHAPTER 3

THE PATTERN OF SUPPLIES

3:1 General

The sources and pattern of supplies of fresh cucumbers to the U.K. market are broadly similar to those for tomatoes. The "off season" months of November to February are supplied chiefly by the Canary Islands and average around 2,000 tons per month. Canary cucumbers overlap into the home season in March/April and September/October. The Netherlands supply small quantities of cucumbers in the winter months, and take a secondary share of the market from April to September when the bulk of the U.K. crop is marketed. Table 7 depicts a 3 year average of the main supplies of cucumbers on a month-to-month basis, and also illustrates the % share of each of the three main sources and of each month. Comparison with earlier statistics, for example those shown for 1967 on page 16 of the M.A.F.F. "Manual of Cucumber Production" would show that there has been a shift in the seasonality of the home production, such that (in recent years) the peak production is higher and occurs 3–4 weeks later than formerly. This is possibly due to the increasing contribution of northern cucumbers with their slightly later season, at the expense of the earlier, southern cucumbers.

Table 7

Monthly supplies of cucumbers in England and Wales ('000 tonnes)

3 year average 1969/71

	England and Wales	Netherlands	Canaries	Other	Total	% of total
January	–	0.1	1.9	–	2.0	3.3
February	–	0.3	1.5	0.2	2.0	3.3
March	0.9	1.2	0.9	0.1	3.1	5.1
April	4.0	2.3	0.1	0.3	6.7	11.0
May	7.0	1.6	–	0.2	8.8	14.5
June	7.1	1.9	–	0.2	9.2	15.1
July	7.5	1.8	–	0.1	9.4	15.5
August	5.3	1.2	–	–	6.5	10.7
September	2.4	1.3	0.1	–	3.8	6.3
October	1.0	0.9	1.4	0.1	3.4	5.6
November	0.1	0.3	2.4	0.3	3.1	5.1
December	–	0.1	2.3	0.4	2.8	4.6
TOTAL	35.3	13.0	10.6	1.9	60.8	(a)
% of Total	58.1	21.2	17.4	3.1	(a)	

(a) Does not add to 100 because of rounding off

Notes

1. Monthly marketings from Scotland and Northern Ireland not available.
2. Conversion: 1 long ton = 1.016 tonnes
3. Source: N.E.D.O./M.A.F.F. Statistics.

Table 8 contains data for the years 1964–71 which indicate the degree of self-sufficiency which the U.K. enjoys for cucumber supplies. It can be seen that this measure has remained roughly constant for some years now. Annual figures do not however, present the whole picture as the relative contributions of home

Table 8

Annual supplies of cucumbers to the U.K. market ('000 tons)

1964–71

	Home Production	Imports	Total	% Self-Sufficiency
1964	32.5	19.2	53.7	60.5
1965	35.3	20.4	55.7	63.4
1966	32.1	22.8	54.9	58.5
1967	33.6	25.4	59.0	56.9
1968	32.2	25.4	57.6	55.9
1969	33.5	25.0	58.5	57.3
1970	32.9 (P)	24.8	57.7	57.0
1971	38.1 (F)	24.5	62.6	60.9

(P) = Provisional (F) = Forecast

Sources: Annual statement of U.K. Trade and Custom Machine Tabulations
M.A.F.F. Key Horticultural Statistics

production and imports of course vary over the course of any one year. Table 9 abstracts monthly "Self sufficiency" from table 7, and shows that the U.K. is approximately 77% self sufficient for 4 months of the year, and more than 55% sufficient for a further 2 months.

Table 9

Monthly supplies of cucumbers to the England and Wales market ('000 tonnes)

% self-sufficiency. 3 year average 1969/71

	Home Production	Imports	Total	% Self-Sufficiency
January	–	2.0	2.0	0
February	–	2.0	2.0	0
March	0.9	2.2	3.1	29
April	4.0	2.7	6.7	60
May	7.0	1.8	8.8	80
June	7.1	2.1	9.2	77
July	7.5	1.9	9.4	80
August	5.3	1.2	6.5	82
September	2.4	1.4	3.8	63
October	1.0	2.4	3.4	29
November	0.1	3.0	3.1	3
December	–	2.8	2.8	0

Figures 1 to 3 show imports by tonnage, value and derived price for the years 1965–71 in histogram form. Current information with regard to imports is contained in the "Overseas Trade Statistics of the U.K.", a monthly "blue book" publication of H.M.S.O. Certain caution should be exercised in the appraisal of this data, as annual totals derived from monthly statistics are subject to error due to adjustment of monthly figures during the following month, and of the annual data in the three months following the end of each year. These arise due to reasons for which such statistics are collected, that is, for revenue purposes, and declared values are often unreliable particularly at times near to the change-over in scales of tariff applied to imports.

Imports of cucumbers into the U.K.: 1965/1971

Fig. 1

'000 Tons per year

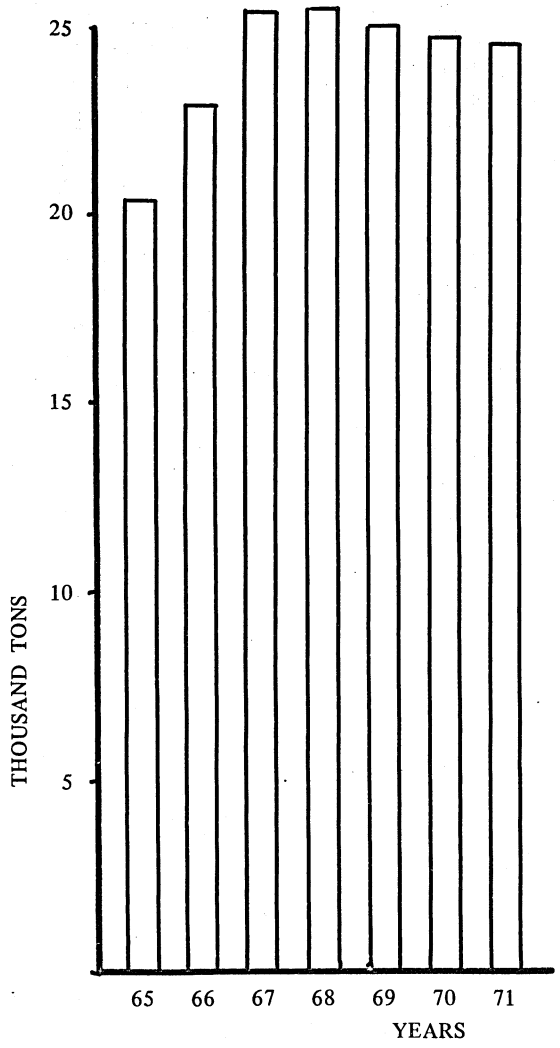


Fig. 2

Million £ per year

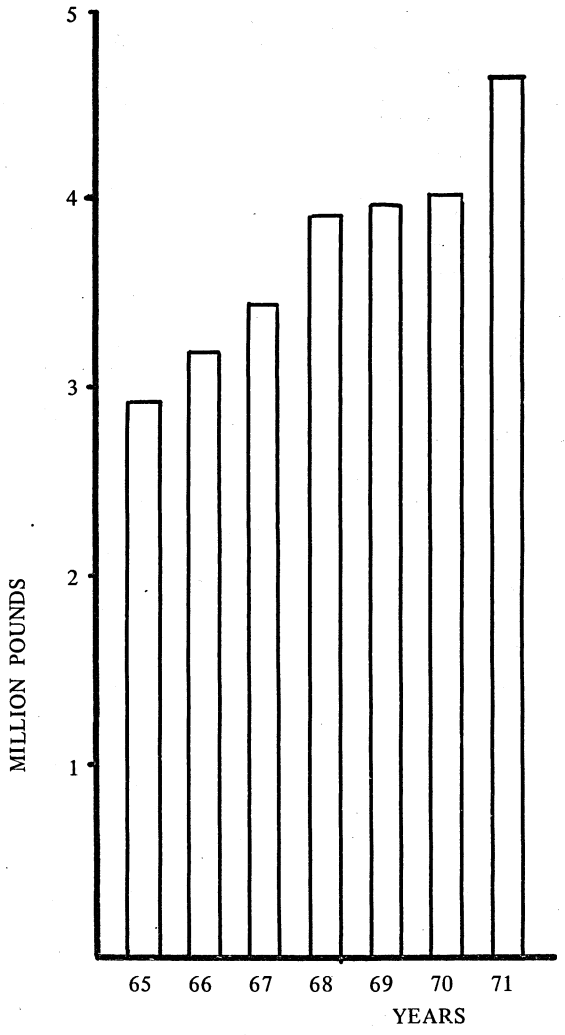
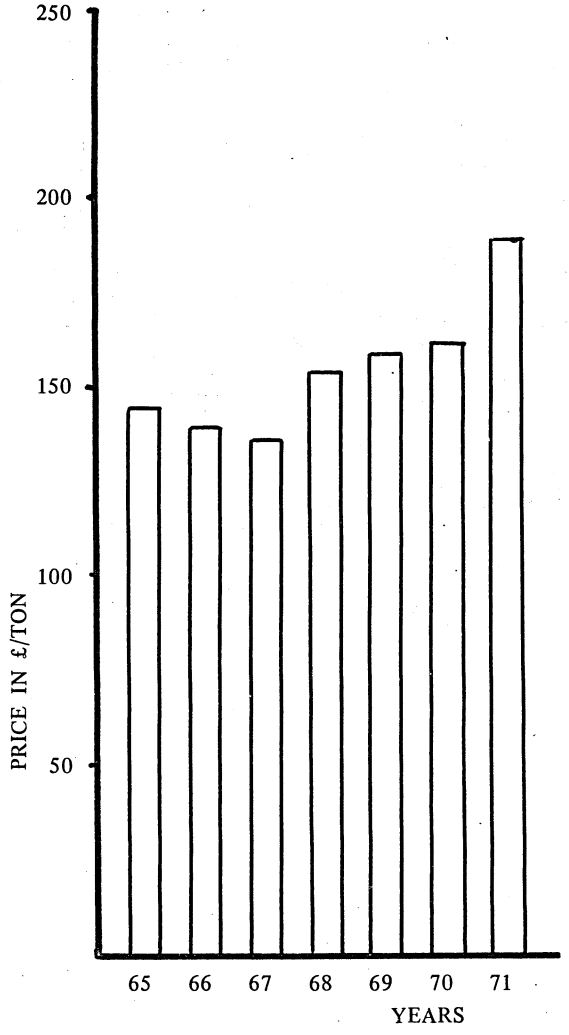


Fig. 3

Derived price £/ton



Source: Annual Statements of Trade and Customs Machine Tabulations

Table 10

Cucumbers – imports by country of consignment

	1967		1968		1969		1970		1971	
	Tons '000	£ '000	Tons '000	£ '000	Tons '000	£ '000	Tons '000	£ '000	Tons '000	£ '000
Irish Republic	0.03	4	0.05	7	0.10	17	0.10	19	0.15	27
Cyprus	0.03	4	0.05	6	0.04	8	0.01	2	0.01	3
Netherlands	18.02	2229	16.19	2384	14.66	2288	12.37	2018	12.15	2202
France	0.28	36	0.40	60	0.19	30	0.71	56	0.50	52
Western Germany	0.02	3	0.05	9	–	...	–	–	–	–
Belgium	0.02	3	0.01	1	–	–	...	...	–	–
Rumania	0.05	7	0.16	25	0.17	27	0.51	95	0.54	95
Bulgaria	–	–	0.02	3	–	–	0.20	32	0.07	11
Spain	0.05	10	0.05	9	0.02	2	0.06	8	0.04	11
Israel	...	...	0.02	1	0.02	5	–	–	–	–
Canary Islands	6.93	1102	8.41	1291	9.81	1458	10.78	1713	11.08	2262
Other	0.01	1	...	...	...	1	0.03	6	0.04	8
Total	25.44	3399	25.41	3796	25.01	3836	24.77	3949	24.58	4671

Source: M.A.F.F. Statistics Branch

Over the past five years, although physical quantities of cucumber imports have tended to decline (fig. 1), values have in fact risen (fig. 2), indicating an increase in the price at which imported cucumbers are sold (fig. 3). In the first three years of the series covered, although physical quantities rose, values rose at a lower rate and derived price fell.

Table 10 gives a more detailed break-down of imported cucumber supplies by country of origin. Whilst imports from our chief overseas supplier – the Netherlands – (and these chiefly concurrent with the home crop) have declined somewhat as a probable result of expansion of U.K. production, supplies from the next most important country – the Canary Islands, have nearly doubled over the past five years. This might indicate a change in eating habits in this country to the extent of greater or wider consumption of salads in the winter months. Whilst this is the impression which one might have gained anyway from the more widespread appearance of cucumbers in the shops at that time, it is not entirely substantiated for the January-March period by the results of the National Food Survey (table 1). It would appear that the increase in consumption has taken place in the months October to December.

Supplies from peripheral countries have tended to fluctuate over the past five years, with the exception of Ireland, France and Roumania, which have increased their sendings to this country. Recent indications[1] are, however, that as a side effect of the troubles in Northern Ireland, Republican supplies of fresh produce are meeting with consumer and retailer resistance in Ulster and in the U.K. mainland parts to which they have been shipped. Spontaneous and unofficial sanctions of this nature must be a serious matter for the emergent glasshouse industry of the Irish Republic, and growers there might merit some sympathy. So long, however, as the troubles continue in Northern Ireland it is understandable that the prospects for the Republic in increasing its horticultural exports to the U.K. must be poor in the immediate future.

Figure 4 depicts graphically the information contained in table 8, and shows particularly the now dominant position of home production during the months April to September. If the recent expansionist trend for U.K. production apparent in the latter period of table 11 continues, then we can expect this dominance to increase still further. Entry to the EEC however, may do much to alter the trend.

Table 11

U.K. production of cucumbers – estimated area and output

1962–71

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Cropped Area (acres)	456	422	430 461	421 450	401 434	358 391	362 401	368 414	403	443
Output ('000 tons)	32.0	31.7	30.3 32.5	33.0 35.3	29.6 32.1	30.8 33.6	29.0 32.2	28.2 33.5	33.9	38.1

Source: Key Horticultural Statistics – M.A.F.F.

Notes:

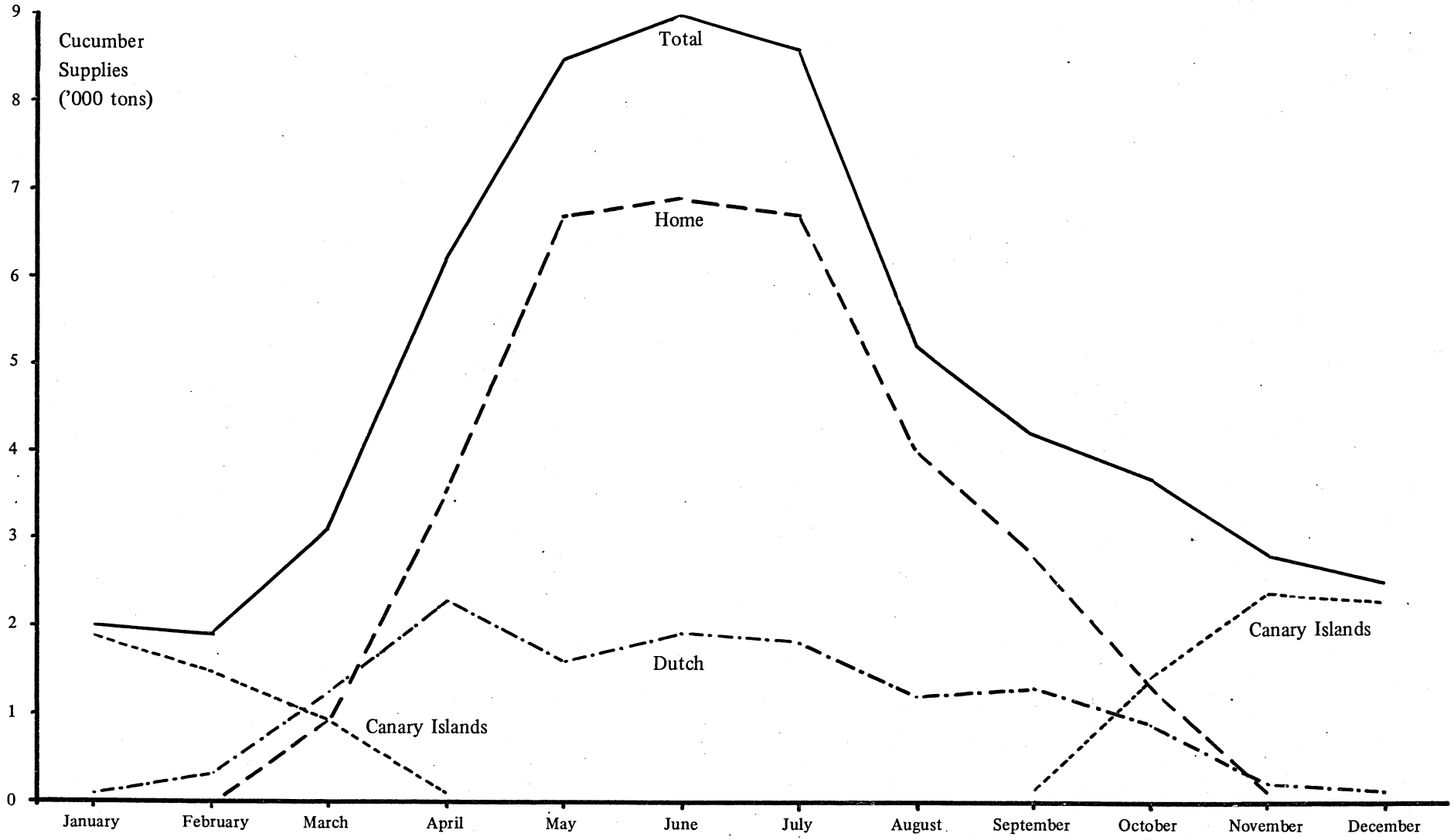
1. Two series of data are included for each heading or row, as the basis of calculation was changed (to embrace more of the smaller holdings) in the middle of the series. The data were therefore calculated for several years on both bases so that trends can be followed through the overlap period.

2. The last two entries on each line are respectively provisional i.e. subject to later adjustment and estimated i.e. based on the forecasts of regional crop intelligence panels.

(1) "Ulster Stores boycott tomatoes from Eire". The Grower, June 10th, 1972.

Fig. 4

Monthly supplies of cucumbers to the United Kingdom market



Source: N.E.D.O./M.A.F.F. Statistics

3.2 Supplies of cucumbers from Eastern Europe

A notable feature of the U.K. cucumber market in recent years has been the appearance of supplies from Eastern European countries – particularly Rumania and Bulgaria. These and other communist bloc countries are keen to secure foreign exchange of almost any Western currency, and by maintaining trading links with Western Europe to avoid overdependence on the Soviet Union. According to Shepherd[1], their policy appears to be to produce about 95% of estimated demand so that they sell everything and preferably at a price enhanced by some measure of supply restriction. Western Germany has been one of the most attractive markets but any Western European country – including the U.K. – would appear to be fair game. The standard of horticultural technology would seem to be adequate for the production of cucumbers and carnations, but sub-standard for tomatoes. The law of comparative advantage is not completely in favour of the Eastern European countries as due to the continental effect of the European land-mass, temperature extremes are rather more wide than for the principal Western European production areas. Despite the proximity of oil-fields in Rumania, heating costs are high. Production is very much large-scale, and on a visit to Rumania in 1970, Shepherd observed State farms of 50 hectares of glass which had plans for 100% expansion. Cucumbers appeared to be of lesser importance than other glasshouse crops.

The global impact of Eastern European imports under quota on the U.K. market, as instanced by table 10 is still small. Local oversupply in March and April 1970 led to some depression of market prices and an N.F.U. application for anti-dumping measures was temporarily upheld by the Board of Trade. Although a provisional charge to duty was imposed on May 11th, the Board's investigation into the application found that the dumping had not caused any great material injury to U.K. producers, and the order was withdrawn on August 10th and securities deposited under it were repaid to the importers.[2] The Board's case was that the dumped imports were not chiefly responsible for the lower prices received by British Growers. It was suggested that the main factors were the poorer weather (reflected in lower prices for other salad crops such as lettuce and tomatoes) and an increase in the total supply of cucumbers – for which home producers were largely responsible. Having had the situation (and growers' fears) brought to its notice however, the Board notified the Rumanian authorities that the position would be reviewed if dumping were renewed and that in effect they might not be treated as liberally in the future. The Rumanians indicated that they would in consequence be reviewing their marketing arrangements.

In a study of the logistics of marketing of fresh salad crops in the Yorks/Lancs region in 1971/72, Matthewman[3] found evidence that Eastern European cucumbers were being imported in not insignificant quantities to northern markets. The produce, which was well-graded and packed, was finding a ready market and supplies were reliable as they were arriving in trans-continental road transport. Some wholesalers were of the opinion that such supplies might well increase in the future.

Imports of horticultural produce from Eastern Europe are subject at present to a block quota by value, within which there is scope for adjustment of the quantity of cucumbers vis a viz other crops. This quota is likely to disappear in the future[4] as the E.E.C. tends to rely on minimum import prices rather than quantitative restriction on horticultural imports. That these E.E.C. restrictions are not unduly discouraging to East European exporters was evidenced by a report in "the Grower" of 2nd September 1972, which said that Dutch cucumber growers were facing increasing competition from these sources in West German markets.

A further report in "the Grower" of October 28th 1972 mentioned a protest meeting at Delft of over 3,000 Dutch growers, including representatives from France and Belgium, where the Dutch Minister of Agriculture ". . . had virtually agreed to try to get the door slammed on Eastern European tomato and cucumber exports to the E.E.C." Attention was also drawn to the considerable expansion of the cucumber acreage in the Thessalonika and Crete districts of Greece. Last season Greece produced around 60,000 tons of cucumbers from 1,500 acres, and much of this can be produced in the period from December to April. At present, however, of the 25,000 tons produced in Crete, only 500 tons have been exported.

(1) Shepherd, F.W. (1972). Private communication
(2) See Board of Trade Press Notice P.A.N. No. 34 dated September 3rd 1970.
(3) Matthewman, P.D. (1973). "The logistics of marketing of selected salad crops in the Yorks/Lancs region", M.A.F.F. Marketing Fellowship: University of Leeds, Department of Agricultural Economics, Report in preparation.
(4) On Britain's accession to the E.E.C. quantitative restrictions were in fact removed on 1st February 1973.

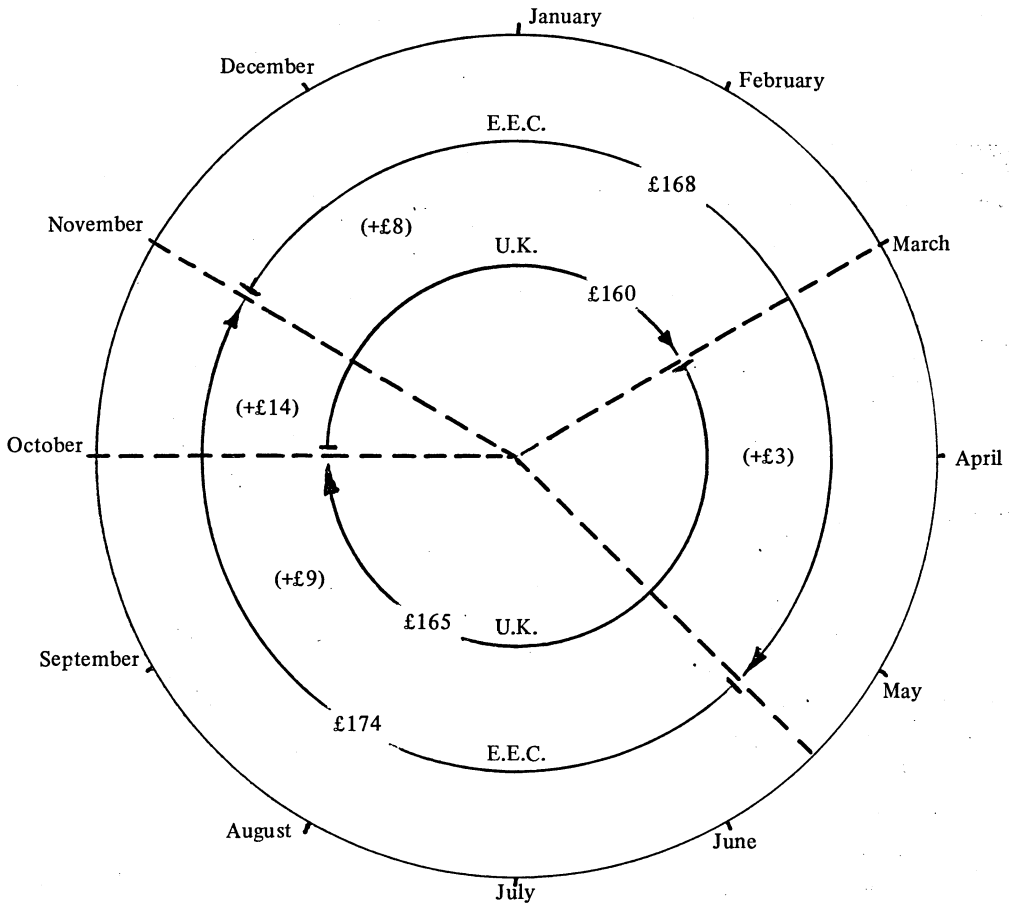
3.3 Tariffs and the E.E.C.

The existing[1] U.K. tariff on cucumber imports is at the rate of £20 per ton from 1st March to 30th September, falling to an ad-valorem rate of 10% from 1st October to the end of February. The common external tariff of the E.E.C. is 20% ad-valorem from 16th May to 31st October, falling to 16% from 1st November to 15th May.

If we assume a grower's average net price of £130/ton for cucumbers, (table 16, next Section) then by adding back the marketing deduction a market realised price (equivalent to wholesale value) of £145 is produced. By testing this figure against the two systems of protection, we can see that the E.E.C. is more protectionist than the U.K. (see figure 5).

Fig. 5

Comparison of the impact of E.E.C. and U.K. tariff protection for domestic cucumber producers. (Based on a wholesale value of £145 per ton).



Notes:

1. Price per ton of imported cucumbers after tariff, indicated within the arrows
2. Advantage of E.E.C. protection over U.K. indicated in brackets between the concensive tariff "rings".

(1) Changed to E.E.C. since time of writing.

Home producers enjoy the high-rate tariff under the U.K. system for the seven months March to September, whereas in the E.E.C. the high-rate lasts for 5½ months only. The lower E.E.C. protective rate is however still marginally higher than the U.K. high-rate (home-season) tariff where the periods overlap.

Production of cucumbers within the E.E.C., compared with that of the U.K. is shown in table 12. By reference back to table 10 we can see that only the Netherlands is a significant exporter to the U.K. West Germany and Belgium have occasionally exported small quantities of cucumbers to the U.K., whilst Luxembourg grows none; and Italy, although growing a considerable amount, exports none to U.K. markets. France is the third largest producer in the E.E.C. and grows nearly three times as many as U.K. home producers. French exports to the U.K. have been equal to or greater than those from the Eastern European countries, and in addition to Dutch exporters, we may expect some increase in supplies from across the Channel when our accession to the E.E.C. is complete.

Table 12

E.E.C. and U.K. production of cucumbers ('000 tons)

	1967	1968	1969	1970
West Germany	71	54	55	63
France	85	88	84	87
Italy	82	82	92	97
Netherlands	270	273	294	305
Belgium	20	24	25	22
Luxembourg	–	–	–	–
Total E.E.C.	527	520	550	573
Total U.K.	33	32	33	33

Sources: E.E.C. Commission
M.A.F.F. Statistics
N.E.D.O.

What will be the effect on U.K. producers, of Britain's entry to Europe? The U.K. tariff on imports will be phased out in five stages, from 1st January 1974 to 1st January 1978. Our main overseas supplier of cucumbers is the Netherlands, and with the removal of internal trade barriers Dutch producers in aggregate will be anxious to export more cucumbers to Britain at any given market price, than they were before. These exports compete directly during our home production season, and so as demand is relatively unresponsive to marginal changes in price, this expansion of Dutch supplies will take place at the expense of home growers producing at or near the margin. Marginal or near-marginal growers are those operating at levels of profitability just sufficient (for the moment) to encourage them to stay in business. Any deterioration in their position, such as a decline (relative or absolute) in market prices, will cause them either to go out of business or to seek alternative enterprises. It is impossible to identify any particular size of business with marginality as of course there are examples of highly profitable and highly unprofitable businesses at all levels of scale. By and large, small growers might find it more profitable if not imperative to concentrate on retail sales or sales to retailers. Medium to large businesses operating through efficiently-run marketing groups or co-operatives will be more than capable of coping with some measure of adversity arising (if in the event it does) through increased competition from overseas. Conventional wisdom has it that it is in the middle of the size range that effects of increased competition will be most felt. Here, medium-sized growers selling independently through the wholesale markets will be competing against imports and the produce of the marketing groups. Some will no doubt succeed but others may find the going tough. So long, however as their produce is as good as the rest present in the market, and so long as their on-holding economics are sound and the market-allocation decisions of the grower or manager are good, then their commercial future is not in doubt. It is worth noting also that in a period when the larger growers' marketing organisations have been making great efforts to woo the national retailing chains through direct dealing (and to be fair, the opposite is also true), the wholesalers themselves may well be predisposed to offer the independent medium to large growers a better deal for their produce than the picked-over remnants of the offerings of those marketing organisations.

Surprisingly, it is on some of the newer, recently expanded medium-sized and large businesses that difficulty might be experienced. In recent years a great deal of capital has been invested in the British Glasshouse Industry – in new glass and new equipment. Although the Horticulture Improvement Scheme has provided just over a third of the investment, the remainder has had to be raised by individual businesses either from accumulated profits or more commonly from bank and other loans. Nicholson[1] has pointed out that there is commonly a drop in overall production efficiency after new glass comes into use, at least in the initial years. Further, expansion at too fast a pace or with unsuitable funding can lead to financial difficulties, and very large-scale enterprises established over a few years are especially vulnerable. It is the burden of servicing loan capital during the period when the new investment is settling down, which will bear heavily on our modernised glasshouse industry. If this settling-down period coincides with or overlaps a depression or relative depression in market prices due to increased imports, then some businesses might be in real difficulty. At the risk of inviting charges of "crying wolf", it is pertinent to remember the financial crisis which beset the Dutch Glasshouse Industry in the mid-1960s[2]. After a period of unprecedented expansion, the Dutch were faced with several years of severe inflation in production costs and static or declining product prices. As the Dutch industry had relied even more heavily than has the U.K. industry since, on borrowed capital, its state became parlous to say the least when the crunch came. History has shown that the Dutch came through this period and a parallel can be drawn that U.K. growers will do the same. It does seem inevitable that at the end of phase three of the present standstill on prices and incomes, our industry will face a further excalation of wage costs. In addition the "energy-crunch" brought about by wasteful over-consumption of fuels in the U.S.A. will be the foundation for further increases in the cost of glasshouse heating fuels. Growers might seek with some justification for comparable rebates on heating fuels to those currently enjoyed by their colleagues in the Netherlands, but the familiar cost-price squeeze seems likely to present a hurdle for the U.K. Glasshouse Industry which only further increases in production and marketing efficiency will enable it to surmount.. Having already invested heavily in capital projects to further these ends, Growers would be entitled to question any such exhortation. The post-investment difficulties mentioned earlier can or should only be short-term, and the end of the adjustment-period (i.e. to common EEC tariffs) should see the U.K. industry emerge from its considerable "face-lift" in a condition well-able to cope with the successful production and marketing of its products in the face of any foreseeable competition.

Apart from the Netherlands, our other major overseas supplier (for cucumbers) is the Canary Islands, which enjoys no preference within the E.E.C. As we can see from fig. 5 that E.E.C. external tariffs are higher at recent prevailing price levels, particularly in the "off" season, Canary producers will initially experience a reduction in their net price home for the U.K. market. This will mean that at given market price levels they will be unwilling to export quite as many cucumbers to the U.K. as they did before.

The position of Eastern European exporters in the enlarged Common Market is at present not clear. They enjoy no preference at the moment, and with the higher E.E.C. tariff levels applying to British markets, might be expected to reduce their supplies here a little. It could be, however, that the E.E.C. may wish to expand its sales of manufactured goods and technology to Eastern Europe for both political and economic reasons, and some preferential arrangements for imports of agricultural produce may be made in the future[3].

The overall effect of E.E.C. entry, therefore, will be to significantly increase competition for home producers in their main marketing season – primarily from the Netherlands. In the "off season" cucumber supplies may at first become less, but will probably increase to their old levels after a short period of time. Any enhancement of "off season" price levels due to reduction in Canary Island exports would be more likely to be exploited at the fringe by Dutch producers, than by lengthening of the home season. The opportunity for home producers to export cucumbers to those E.E.C. member countries who are not self-sufficient will be increased, but we would be competing in a market where Dutch distribution costs are lower, for reason of proximity, than our own.

(1) Nicholson, J.A.H. (1972). "Early Tomato Production", Agricultural Enterprise Studies in England and Wales: Economic Report No. 11. School of Rural Economics and Related Studies. Wye College, University of London.

(2) See: Folley, R.R.W. (1968) "The Role of Credit in Business Growth: An example from the Netherlands". Wye College, Department of Economics.

(3) For similar reasons we may expect arrangements to be made for Spain and the Canary Islands in the future, although the political motivation may be by no means as strong.

CHAPTER 4

CUCUMBER PRODUCTION IN THE U.K.

4.1 Acreage

A reasonably up-to-date account (1968) of commercial cucumber growing in the U.K. is contained in the Ministry of Agriculture's Bulletin No. 205 "A Manual of Cucumber Production". For questions relating to cultural details, varieties, pests and diseases, as well as marketing and full details of the compulsory grades scheme, this manual is to be recommended.

The data contained in table 11 indicate that although cucumber acreage fell steadily to a low of just under 400 acres in 1967, it has since recovered and in 1971 stood at 443 acres. This change is more due to changes in the constituent counties – often in opposite directions, rather than to a general national trend. Table 13 examines the area of cucumbers in some of the principal counties in England and Wales.

Table 13 shows that the East Riding of Yorkshire is alone amongst the principal counties in that it has increased its area of cucumbers over the ten years 1962–71, so much so that from being the least important county amongst the 'principals' in 1962, four years later it had the second largest area of all. County acreages do not always give the most useful indication of trends, and for purposes of this analysis it is better to consider general glasshouse areas, for cucumbers these would be Lea Valley, East Yorkshire, and the South Coast areas. Table 14 contains the amalgamated figures of Essex and Hertfordshire, to give a crude representation of the Lea Valley: East Yorkshire, and the amalgamated figures for Hampshire and West Sussex to give a crude representation of the South Coastal area. The percentage share of the England and Wales total for each of the three areas is also calculated.

It can be seen from table 14 that the South coastal area does not regard cucumbers as an important crop. It seems likely that the large areas of high-technology glass there have been devoted to crops more profitable than cucumbers, and that the fluctuating area of cucumbers is produced in elderly cucumber-houses. The Lea Valley continues to lose glass to housing and industrial development as well as to the exploitation of the large gravel deposits in that area. The interesting comparison is that between the Lea Valley and the East Riding of Yorkshire. Both now contain the two largest concentrations of cucumber production in the country and both are characterised by the central position of an influential growers' co-operative marketing organisation. Whereas the share of the Lea Valley in the national total has shrunk from a dominant 64% in 1962 to 41% in 1971, the emergent industry of the North has sprung up from 2% to 25%. Fig. 6 illustrates the change in % share of the total national acreage for these two areas over the 10 year period 1962–71. Insofar as the decline in the Lea Valley (or more strictly Essex and Hertfordshire) acreage is due to the inexorable progress of urbanisation (sometimes in the wake of mineral exploitation) it would be reasonable to assume that the trend will continue.[1] The expansion in the East Riding of Yorkshire has been largely due to the growth of the constituent members of the Humber Growers Marketing Organisation. Whilst land is not a limiting factor on Humberside, the willingness of growers to invest in further glasshouse construction programmes may be. Even without further absolute acreage expansion here, the % share of the U.K. total cucumber area seems likely to increase following the continued reduction of Lea Valley glass.

An interesting aspect of the comparison between the areas which indicates a possible increase in the strength of the East Yorkshire industry not revealed by straightforward totals of acreage is that of the composition of sizes of individual businesses, depicted in table 15. Whilst the share of the area held by businesses of less than 4 acres has fallen in the East Riding, it has increased in Essex and Hertfordshire. At the same time the share of the acreage held by businesses with cucumber acreages in excess of 4 acres has risen in the East Riding and fallen in Essex and Hertfordshire.

(1) There are indications that a significant proportion of Lea Valley glass may change from cucumbers to tomatoes. See report in "The Grower" 28th October, 1972, which suggested that some 30–40 acres might be involved.

Table 13

Glasshouse cucumber acreage: selected counties of England and Wales

July Glasshouse Census

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Essex	154.80	133.89	143.37	132.91	138.38	126.44	122.16	114.98	109.12	116.67
Hertfordshire	133.69	127.98	121.12	111.98	101.25	78.23	65.30	55.68	56.48	55.08
Buckinghamshire	17.40	18.11	17.05	17.02	16.85	16.69	16.66	16.50	17.69	12.40
Hampshire	12.55	12.73	11.09	10.67	9.09	8.44	9.75	8.28	9.97	7.74
West Sussex	11.38	10.50	9.97	9.97	11.98	10.24	9.93	12.75	9.22	9.73
Middlesex	11.11	10.99	11.06							
Greater London (part)				11.66	12.35	9.72	7.73	7.70	8.33	5.90
Bedfordshire	11.04	11.12	9.71	6.40	6.38	8.87	6.45	8.32	5.15	3.04
East Riding (Yorks)	8.84	10.40	16.46	23.32	30.94	33.48	56.13	74.88	79.47	104.40

Source: July Census M.A.F.F.

Table 14

Glasshouse cucumber acreage and share of the England and Wales total

Three regions 1962–71

	England & Wales	Essex & Hertfordshire		West Sussex & Hampshire		East Riding	
	Total	Total	%	Total	%	Total	%
1962	447.76	288.49	64.4	23.93	5.3	8.84	2.0
1963	413.21	261.87	63.4	23.23	5.6	10.40	2.5
1964	417.49	264.49	63.4	21.06	5.0	16.46	3.9
1965	404.51	244.89	60.5	20.64	5.1	25.32	6.3
1966	408.25	239.63	58.7	21.07	5.2	30.94	7.6
1967	368.48	204.67	55.5	18.57	5.0	33.48	9.1
1968	373.12	187.46	50.2	19.68	5.3	56.13	15.0
1969	384.93	170.66	44.3	21.03	5.5	74.38	19.5
1970	379.90	165.60	43.6	19.19	5.1	79.47	20.9
1971	418.38	171.75	41.0	17.47	4.2	104.40	25.0

Fig. 6

Comparison of "Lee Valley" with East Riding of Yorkshire = Share of the total national acreage of cucumbers

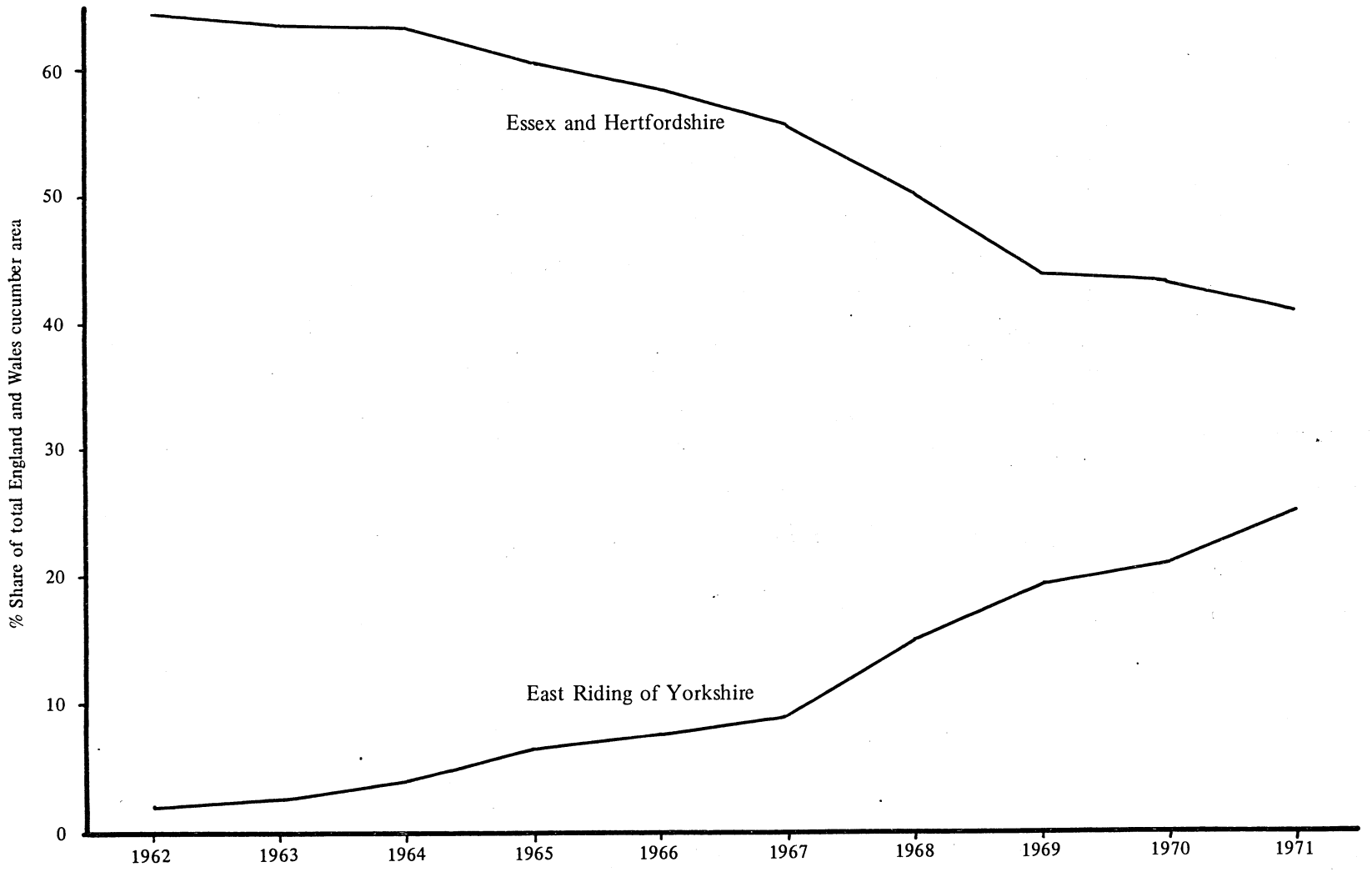


Table 15

% share of area total acreage of cu[s] on different sizes of business

Essex and Hertfordshire, and East Riding of Yorkshire

	Essex and Hertfordshire			East Riding of Yorkshire		
	1967	1969	1971	1967	1969	1971
Under ¼ acre	3.22	3.36	3.89	11.26	4.15	3.07
¼ and under ½ acre	7.36	8.15	7.72	4.69	4.05	1.30
½ and under 1 acre	20.08	21.90	18.42	25.57	9.04	5.27
1 and under 4 acres	43.78	52.99	59.51	42.56	37.08	28.51
4 and under 10 acres	17.87	5.87	3.48	15.92	25.15	17.35
10 acres and above	7.69	7.73	6.98	0.00	20.53	44.50

	1967	1969	1971
% of cucumber acreage on holdings with less than 4 acres of cucumbers			
Essex and Hertfordshire	74.44	86.40	89.54
East Riding of Yorkshire	94.08	54.32	38.15
% of cucumber acreage on holdings with 4 acres and more, of cucumbers			
Essex and Hertfordshire	25.56	13.60	10.46
East Riding of Yorkshire	15.92	45.68	61.85

4.2 Cucumber prices

Horticultural price information is notoriously volatile, and a valid average is difficult to pin down with much accuracy. One of the factors which makes horticultural commodities unique derives from the organisation of selling and buying and another from the nature of the product itself; horticultural commodities tend on the whole to be sold in relatively small lots, so that the 'average price', say for a year, may have to be derived from hundreds of thousands if not millions of individual selling transactions.

Price information is available from a variety of sources – the horticultural trade press and some other allied publications contain a weekly market section where price information from correspondents in the main markets is collected together, usually in the form of a price range of various commodities. The Ministry of Agriculture collects "most usual" price information via its Horticultural Marketing Inspectorate and this is published by the Ministry in its statistics. It is released to interested commercial publications, some of which also publish it weekly. The Ministry claim that this information is more reliable than that from trade press correspondents, if only because marking inspectors cover the whole of the market, whereas it is pointed out that the special correspondents of the trade journals are often wholesalers themselves whose reported prices may only cover their own particular area of the market. The Ministry also publish annual growers' net prices, which are derived from estimates of production and of total net value. Apart from being just single annual average figures, these data are net prices to the grower rather than the gross prices which produce makes on sale from wholesaler to retailer.

A further category of price information is sometimes available and this is derived from University surveys, one of which is described in a later section. Average price information is built up from an amalgam of actual net prices received by a sample of growers. This category is the most accurate of all but is the most difficult and laborious to collect, involving calculations on the thousands of individual transactions described earlier. In a similar vein, the price information derived from the annual household food consumption and expenditure research of the national food survey, is relatively more accurate than the main published sources.

In summary therefore, price information is available for the three major stages of produce marketing:

1)	Growers' net prices –	(a)	as collected in sporadic University commodity studies.
		(b)	as derived from M.A.F.F. estimates and calculations thereon.
2)	Wholesale market prices –	(a)	as collected by the trade press
		(b)	as collected by the M.A.F.F. marketing inspectorate.
3)	Retail prices –	(a)	as collected in the National Food Survey
		(b)	as collected by the M.A.F.F. and published as "Food Facts" press releases.

Since the introduction of statutory grading in 1968, price information for the various classes has been collected and now forms the basis of the M.A.F.F. "most usual" prices. Although it is possible thus to collect price information on the wholesale markets, growers' sales notes often contain little or no reference to the class or grade of produce. This is particularly true at the beginning and end of a season and in the first two or three years of compulsory grading. Further, some growers have followed the practice of labelling all produce as Class 3, although the commercial advantage of doing this is not clear. The result of these factors is that whilst M.A.F.F. class or grade prices collected in the wholesale markets are a reasonable source of information, any attempt to compile similar information from growers' sales notes is not likely to be successful. Aspects of the grading regulations are discussed under 4.3.

Table 16 contains estimated U.K. growers' net prices for cucumbers for the years 1964–71, and indicates that after a rise to a peak of £145 per ton in 1969 (the first year of the survey described in a later section) prices fell by about £20 a ton to a low level in 1971. Although accredited in some circles to increasing imports in the home season, this fall is probably due to the recent expansion in U.K. cucumber production.

Table 16

U.K. cucumber growers' estimated farm-gate prices (£1 ton)

1964	1965	1966	1967
133.01	134.50	125.23(a)	133.18(a)
1968	**1969**	**1970(P)**	**1971(F)**
141.58	145.01	130.37	124.38

Notes:

(a) Amended figure
(P) Provisional
(F) Forecast

Source: M.A.F.F.
Key Horticultural Statistics

Figure 7 depicts a 5-year mean of cucumber prices for U.K., Canary and Dutch cucumbers at wholesale level. For the period when statutory grades were in force (1968 onwards), the Class 1 price was used, for 1967 the 'most usual' price quoted was used. The peak price period appears to be in February when U.K. and Dutch supplies are beginning to come forward. Price then falls steadily through March and April to reach a fluctuating main-season level of around 7–8p per cucumber, rising in October with the advent of new season Canary cucumbers to reach a peak at Christmas. New Year prices for imported cucumbers appear to be low until the start of the new home season. In general, home produced cucumbers appear to earn a premium over and above Dutch cucumbers, but this is by no means always consistent. When Western European cucumbers compete with supplies from the Canary Islands, the former earn a premium over the price of the latter.

Figure 8 depicts a 4-year mean of prices for homegrown cucumbers for each of the three statutory grades. The average differential between Class 1 and Class 2 for this period was 2.64p per cucumber, whilst that between Class 2 and Class 3 was 2.13p per cucumber. It is probable that the differential between grades depends on the relative quantities present on the market, but in the absence of quantitative information this relationship cannot be examined further.

Price information as collected in the National Food Survey for the four seasons of the year, is shown in table 17. The data refer to prices paid by housewives in the shops, and cover the period 1966/71.

Table 17

Average retail price of cucumbers (pence/lb)

	1966	1967	1968	1969	1970	1971
January/March	13.54	13.92	15.42	16.00	15.84	16.71
April/June	11.04	11.38	11.71	12.45	12.10	13.61
July/September	9.13	10.13	10.46	10.11	10.48	11.50
October/December	10.83	12.29	11.79	12.20	11.63	14.09
Yearly average	10.58	11.79	11.71	12.00	11.81	13.13

Source: National Food Survey

Fig. 7 .

Ministry "Most usual" prices: 5 year mean 1967/71

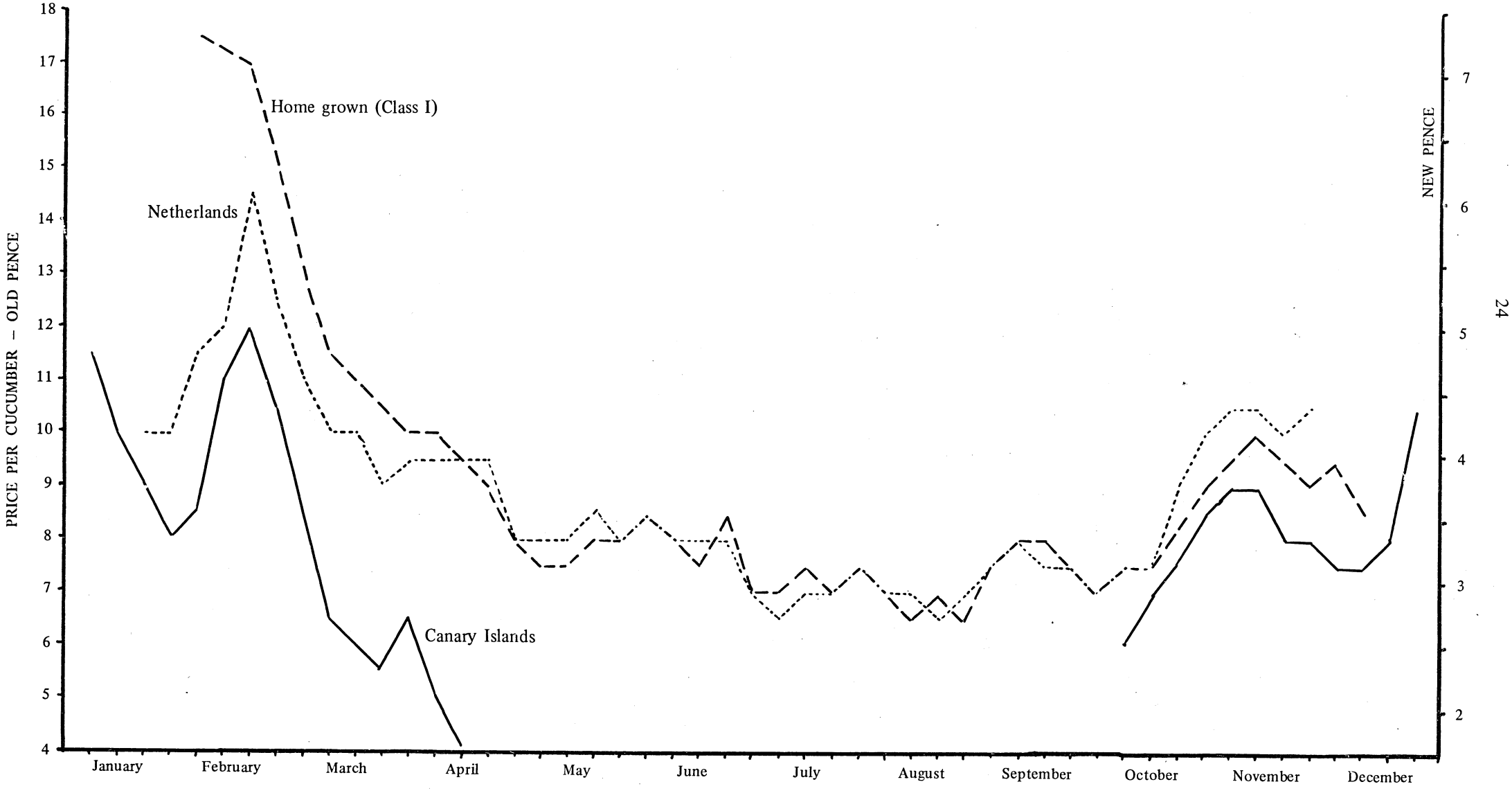
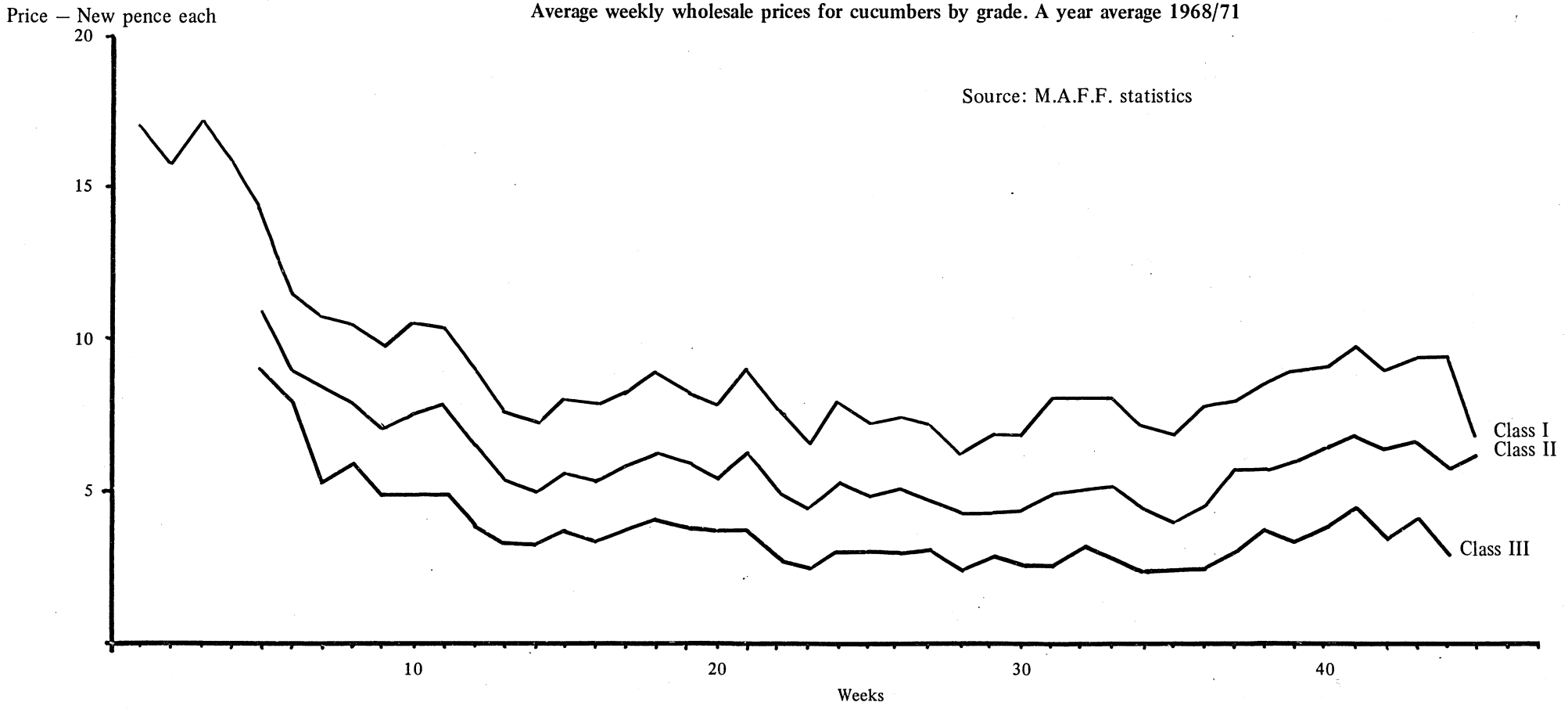


Fig. 8

Average weekly wholesale prices for cucumbers by grade. A year average 1968/71



Source: M.A.F.F. statistics

In order to make a comparison of retail and farm-gate prices over this period, the data in table 16 were converted to pence/lb. The bulk of the home marketings were made in the period April to September and so weighted average prices were derived from table 17 by multiplying the prices for the spring and summer quarters by the weight of cucumbers consumed per head. The ideal weighting factor would have been the amount actually purchased, but it is thought that no great error would be introduced by using consumption data. The sum of the two products was then divided by the sum of the consumption for the two quarters. Although the derived price paid by consumers rose steadily over the six year period (figure 9) the growers' farm-gate price fell after the fourth year. The mean difference between the two price graphs was 5.13 pence per lb. This sum represents the margin available to cover:–

1) Transport from holding to market.
2) Wholesalers' margin.
3) Retailers' margin.

In a period when average retail price rose steadily, it would be interesting to know why growers' net prices fell in the last two years. The results of the estimation may be a freak or they could be a reflection of the general trend in the distribution of the price which the consumer pays for fresh foodstuffs. With increasing sophistication of packaging and other preparation, it is inevitable that the proportion of the final retail price which finds its way to the grower, will decline. Of course, most growers perform their own grading and packaging, in which case the value or utility which is added by the distributive chain has not really altered, at least for cucumbers; some cucumbers are packed by specialist organisations but not to the extent which would account for the above-mentioned widening gap between what the grower receives and what the consumer pays. It may be that the changing pattern of retailing will account for a part of the divergence. The share of fresh produce trading enjoyed by the supermarkets and chain stores has increased dramatically in recent years. By and large these stores do not charge lower prices than traditional retailers (for fresh produce), if anything, many of them charge slightly more and they are not having to provide (and pay for) personal service. At the same time they aim to buy in bulk and are in a position to negotiate lower procurement prices than the traditional retailers who do provide personal service. These latter have had to face up to increases in one of their major costs i.e. labour, and in consequence will have been aiming for a greater proportional margin than they were before. Wholesale traders have been pressing for increases in the rate of commission for some years now. The 7½% rate is now almost unknown, 10% is the norm and 12½% is encountered on occasion. To be fair to the wholesale trade, they too have faced escalating wage costs and the programme of market reconstruction has meant higher rental charges for a majority of them. But all of this leaves the grower a trifle bemused. Admitting the crudeness and scope for error in the calculations which produced fig. 9, we are left with the picture that over the six years, growers' farm-gate prices were slightly lower at the end than at the beginning, and they too have had to cope with increases in the cost of practically every input they use. The price paid by consumers on the other hand, rose by nearly 20% over the six year period.

4.3 Statutory grading of cucumbers

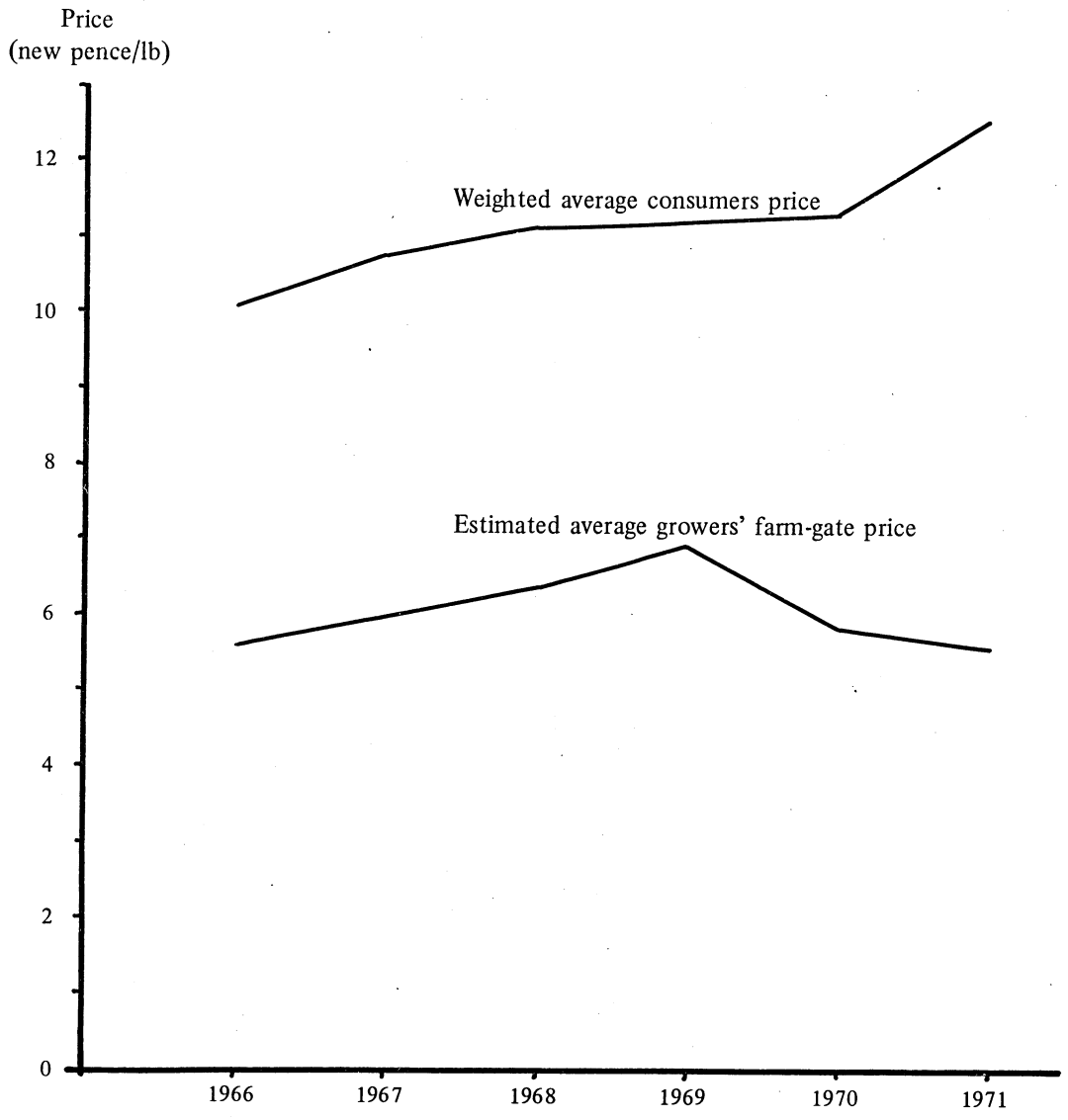
Under the provisions of the Horticulture Improvement Scheme (as extended in 1964) a statutory grading scheme for cucumbers was introduced in January of 1968. Produce would have to be graded to certain standards for sale at wholesale level, and a Horticultural Marketing Inspectorate was set up to see that these standards were adhered to. Inspection would only take place at the wholesale level and retail sales were exempt from the regulations.

Grading of cucumbers depends on size and boxes are classified by "count" i.e. the even number contained in a standard sized (21½" x 16" x 2¾" or 17" x 13½" x 4") container. The most usual counts are 10, 12, 14 and 16 cucumbers per box. Whilst retaining the classification by count, the statutory grading scheme introduced a minimum weight of 250 grammes per cucumber for "Extra" class and a minimum weight of 200 grammes per cucumber for classes 1 and 2. A minimum weight was not prescribed for Class 3. Other quality attributes such as type, conformity, colour, shape, cleanliness, defects and blemishes (minimum acceptable level or absence of) were also prescribed for each grade.

With the accession of the U.K. to the European Economic Community in 1973, the common grading requirements for that community became applicable to the home crop on 1st February of that year. The quality standards are now much the same as they were for the scheme introduced in 1968 with the exception of weight of each cucumber. The minimum weight of 250 grammes now applies to Classes 1 and 2 as well as

Fig. 9

Estimated growers' average farm-gate prices, compared with weighted average price paid by consumers: April to September



Notes

1. Consumers' price derived from N.F.S. data.
2. Growers' farm gate price derived from M.A.F.F. estimates.

"extra" class, and minimum weights of 150 grammes (from 1st October to 31st May) and 250 grammes (from 1st June to 30th September) now apply to Class 3. Whereas grading regulations previously covered mainly sales in the wholesale markets, they now apply to points of entry of imported cucumbers, such as ports and distribution depots, to despatch points (e.g. for large growers or co-operative packhouses) and to the retail stage itself. Where the produce is presented in its original packaging (at retail) the class label must be clearly displayed. The label itself must bear (in addition to class and count information) details of identification of packer or despatcher and origin.

CHAPTER 5

CUCUMBER PRODUCTION IN THE EAST RIDING

5.1 General

The development of the East Riding Horticultural Industry and particularly that of the glasshouse districts around Hull, has been adequately described elsewhere[1,2 & 3]. Data presented in Chapter 4 indicates that the region has not only been increasing its percentage share of the total U.K. cucumber acreage, but in addition this production has been carried out on increasingly larger holdings than elsewhere in the country. Undoubtedly the striking feature of the expansion of East Riding production in the past decade has been the Humber Growers' Marketing Organisation at Welton near Brough. The co-operative was formed in early 1961 with nine members and a rented, temporary packhouse. Overcoming the difficulties which brought about the downfall of similar co-operatives elsewhere, Humber Growers expanded from 30 acres of glass in 1961 to a total of 101 acres in 1972 of which 93 acres were devoted to cucumbers. An expansion programme involving a further 15 acres of new glass and the heating of much of the 20 acres currently unheated, is in hand, and it is intended that this new area will be planted with cucumbers and production generally scheduled for a 2 week earlier start[4].

As stated in the introduction to this study, the survey of cucumber production in the East Riding did not cover member-holdings of the Humber Growers' Organisation and it is suggested in consequence that the results are biased towards smaller-scale production although including a few medium-sized and large businesses. The crop primarily surveyed was that for 1970 and a total number of 25 growers provided varying amounts of information. 19 growers provided full data on the 1970 crop, and of these, 12 provided information also for 1969.

The layout of the remainder of this chapter follows, it is hoped, a logical progression. General information about the survey holdings (5.2) is followed by data relating to the methods employed in growing the cucumber crop (5.3). The cost of items used in production is covered in section 5.4. Having employed these methods and inputs, a crop is produced, and yields form the subject of section 5.5. The crop has then to be marketed (5.6) and aspects of grading, packing, transport, method of sale and prices received are covered in this section. Marketing costs are deducted from gross revenue to give net revenue, which is expressed in several different ways. A picture of the pattern of production on the sample holdings in 1969 and 1970 is given in section 5.7, followed by a breakdown of production and marketing costs and returns in the final section (5.8) of the chapter.

5.2 General Holding Data

Figs. 10, 11 and 12 depict frequency distributions of total glass area, total heated glass and total cold glass per holding for the gross number of 25 holdings giving information in the 1970 survey. Three holdings had less than 10,000 sq.ft. of glass, but most had more than 50,000 sq.ft. in total. More than half of the holdings had less than 25,000 sq.ft. of heated glass and at the same time more than half had more than 50,000 sq.ft. of cold glass.

(1) Hales, A.W. (1964). "Glasshouse Production in the East Riding of Yorkshire". University of Leeds, Department of Agricultural Economics.

(2) Hales, A.W. (1966). "The Development of Horticulture in the East Riding of Yorkshire". Scientific Horticulture, Vol. XIX, 1967. pp. 87–95.

(3) Sutherland, A.M. and Batty, G.W. (1966). "The Development of Intensive Horticulture in the East Riding". N.A.A.S. Quarterly Review, Issue No. 70. pp. 57–61.

(4) Bean Bros. (1972). Letter to the editor of the "Grower" 25th Nov. 1972.

Fig. 10

Distribution of total area of glass per holding

(25 holdings, 1970)

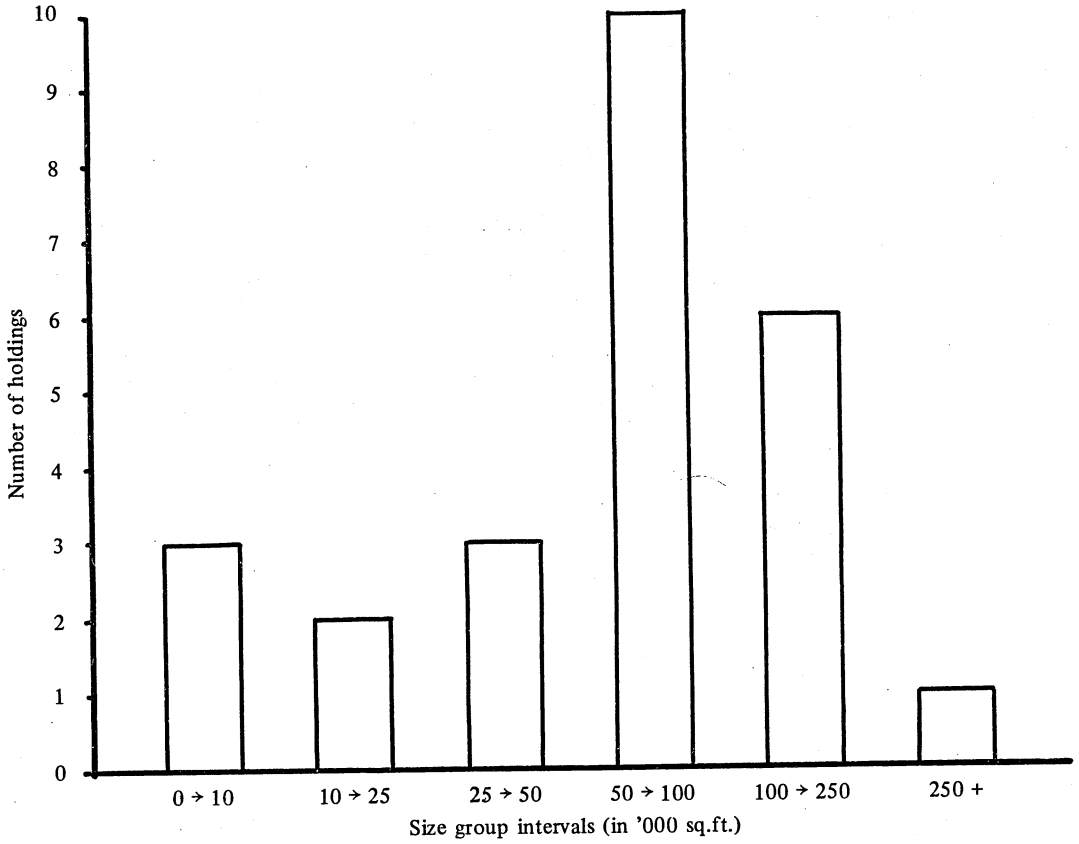


Fig. 11

Distribution of area of heated glass per holding

(25 holdings, 1970)

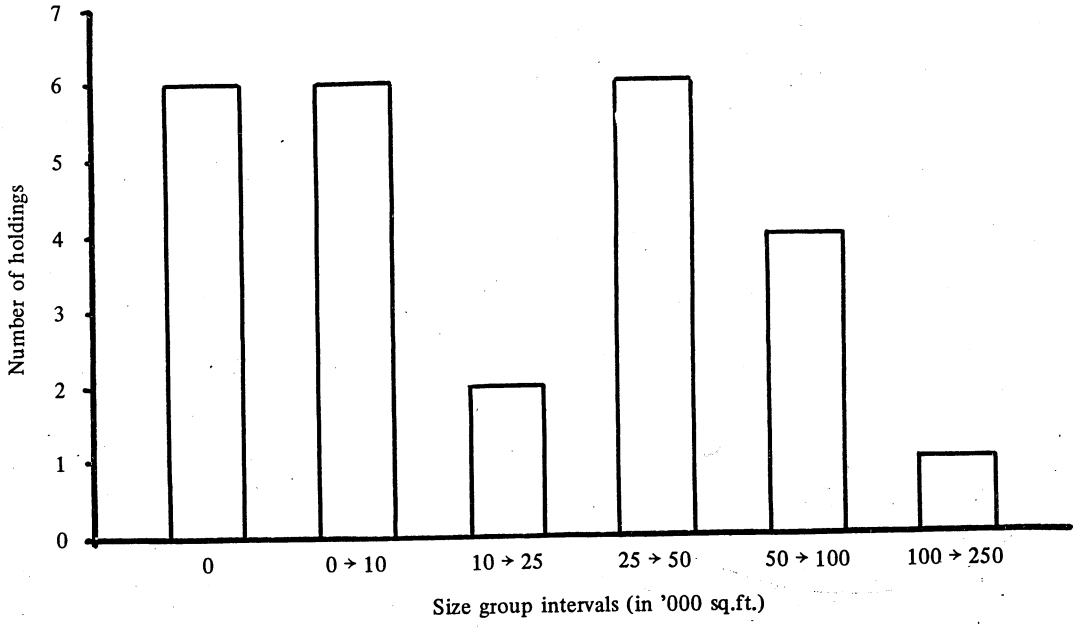


Fig. 12

Distribution of area of cold glass per holding

(25 holdings, 1970)

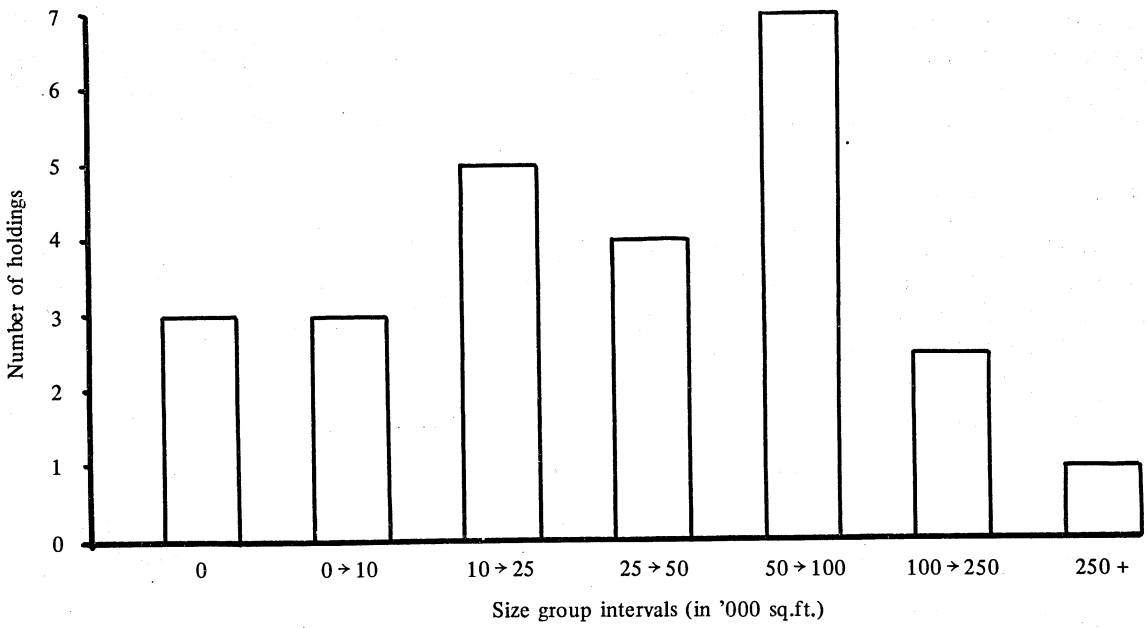


Fig. 13

Distribution of area of cucumbers per holding

(25 holdings, 1970)

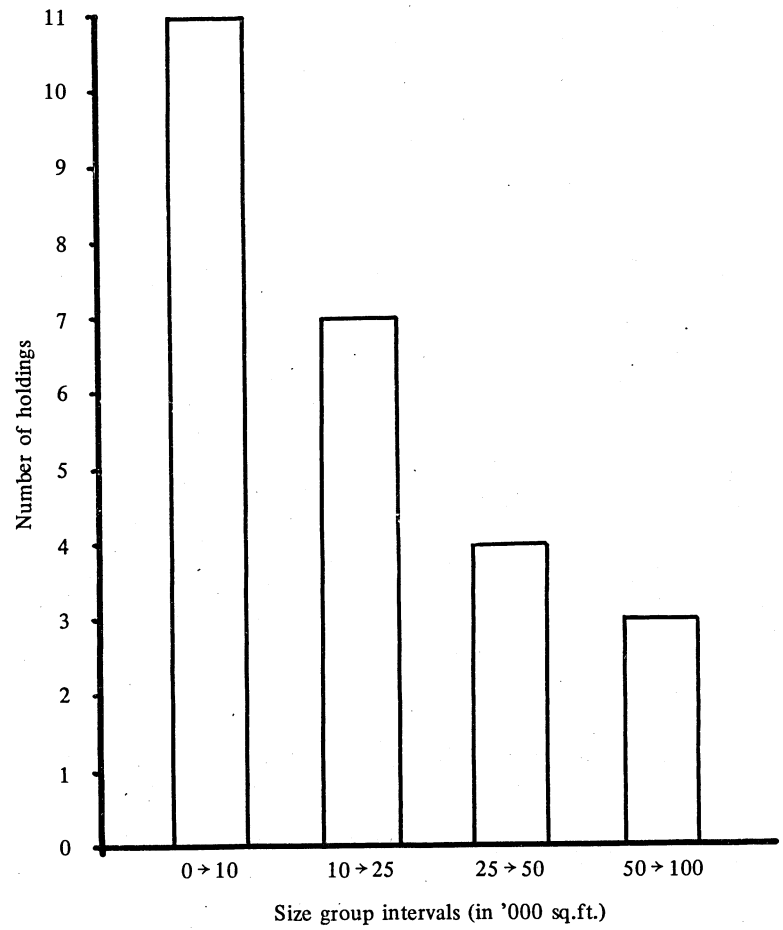


Fig. 13 shows that the large majority of holdings had rather less than 25,000 sq.ft. of cucumbers, most having less than 10,000 sq.ft. Four holdings in the survey cropped 100% of their glass area with cucumbers but with one exception these were mainly of small size. Four of the larger holdings (in excess of 2 acres of glass) had between 40 and 50% of the area in crop with cucumbers. All other holdings had less than 27% cropped with cucumbers. The total area of glass owned by the 25 growers, amounted to 47 acres of which 18 were heated and 29 were cold. The total area of cucumbers grown was 11.7 acres by all holdings, whereas that grown on holdings for which full production data was available, amounted to 8.9 acres.

5.3 Crop Management[1]

Of the total area of cucumbers grown by the 19 holdings supplying full information, 5.7 acres or 64% were heated, and 3.2 acres or 36% were cold. This is an indication of the less specialist nature of many of the holdings in the survey compared with the large-scale production of earlier cucumbers represented by the Humber Growers' Organisation where a much greater proportion of the crop is heated.

5.3.1 Varieties

Average from 25 holdings, 1970

Variety	Area (sq.ft.)	%	Number of plants	%	Density (plants/'000 sq.ft.)
Sporu	216471	42	23418	44	108
Bergastan/Telegraph	87920	17	6648	13	76
*Bambina	66660	13	8033	15	121
Bitspot	42527	8	5230	10	123
*Brilliant	37569	7	4144	8	110
Bittex	29104	6	2920	6	100
*Simex	11490	2	810	2	70
*Pepinex	11490	2	810	2	70
*Princess	5200	1	600	1	115
Conqueror	2400	0.5	200	0.4	83
	510831		52813		103

*All-female variety
%s do not add to 100 because of rounding

5.3.2 Sowing Dates (19 Holdings 1970)

These are shown in fig. 14. The earliest were sown in late December, the main part in March/April, and the latest in early June.

5.3.3 Pot Size (19 Holdings 1970)

50% of the young plants were pricked off into 4½" pots, 24% into 5" pots and 11% into 4¼" pots. The remaining 15% were pricked off into 3", 3½", 4" and 5½" pots and in boxes. The decision to use a particular size of pot will depend on the stage of development of the plant (5.3.5), which the grower prefers it to have reached before planting out into the beds. This choice will be tempered to some extent by the availability of the glasshouse for planting-up. Obviously if the grower hopes to bring off a spring lettuce crop and not have an unduly delayed cucumber crop, then larger pots may be used for growing-on after pricking off, in order that the plants do not become pot-bound.

5.3.4 Planting Dates (19 Holdings, 1970)

These are shown in fig. 14. The earliest were planted out in early March, the main part in April and May, and the latest in late June.

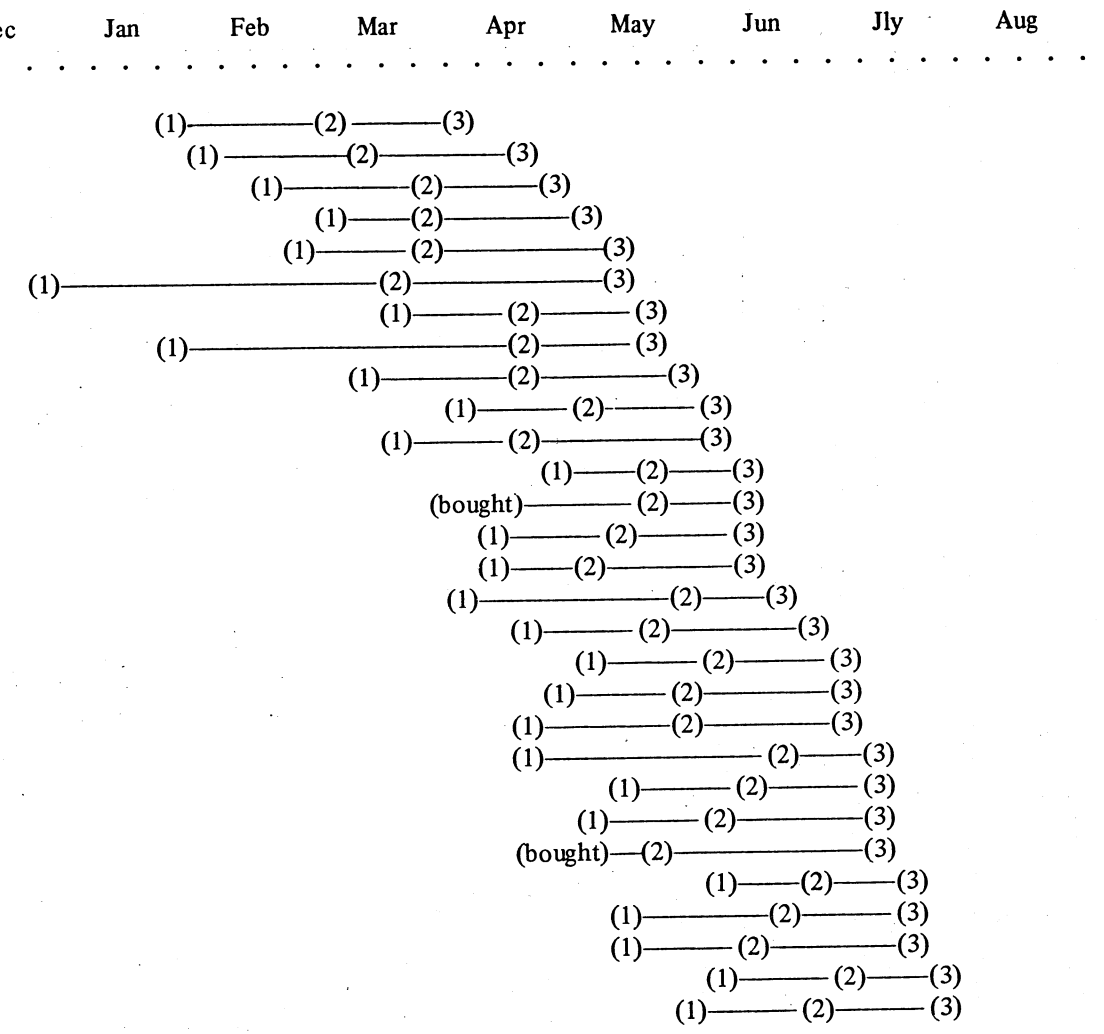
(1) For an introduction to modern commercial cucumber production and an explanation of the techniques covered in this section, see M.A.F.F. Bulletin No. 205. "A Manual of Cucumber Production".

Fig. 14

(1) Sowing, (2) planting and (3) first harvest dates

(29 crops on 19 holdings, 1970)

Crop code	Heating system
CBR/67	Heated (?)
CBR/32/1	Hot water
/2	Hot water
CBR/37/4	Steam/hot water
CBR/19/1	Hot water
CBR/10/1	Hot water
CBR/37/2	Steam/hot water
CBR/10/2	Hot water
CBR/62	Steam/air
CBR/37/1	Steam/hot water
CBR/30	Hot water
CBR/37/3	Steam/hot water
CBR/59	Cold
CBR/15	Cold
CBR/4	Air heater
CBR/19/2	Cold
CBR/22	Cold
CBR/38/2	Cold
CBR/28	Cold
CBR/56	Cold
CBR/26	Cold
CBR/38/1	Cold
CBR/53/1	Cold
CBR/23	Cold
CBR/9	Cold
CBR/38/3	Cold
CBR/7	Cold
CBR/53/2	Cold
CBR/38/4	Cold



5.3.5 **Planting Stage** (19 Holdings, 1970)

15 growers judged the time to plant by the number of true leaves. 4 planted at the 5th leaf stage, 7 at the 4th leaf, 3 at the 3rd leaf and 1 at the 2nd leaf. 4 growers judged the time to plant by the number of weeks growth from pricking off. Of these, 2 planted at 5 weeks whilst the other 2 planted at 4 weeks. Due to variation in growing regimes these two basic methods are not strictly comparable although one grower equated the emergence of the 4th true leaf with 5 weeks growth, whilst another equated the emergence of the second true leaf with 4 weeks growth.

5.3.6 **Spacing in final position** (19 Holdings, 1970)

Data on planting density is contained under the section for "Varieties" mentioned earlier. Dimensional spacing will depend on the size and arrangement of bays of the glasshouse. 5 growers planted at 24" apart, 4 at 20" and 4 at 18". Others planted at 15, 16, 23, 30 and 36" apart.

5.3.7 **Planting Beds** (19 Holdings, 1970)

11 holdings, comprising 85% of the acreage, used straw bales or wads in conjunction with fertilisers and/or compost, whereas the remainder used soil and manure or compost beds.

5.3.8 **Training system** (19 Holdings, 1970)

14 holdings comprising over 90% of the survey cucumber acreage, used the Cordon system, whilst the remaining 5 holdings with less than 10% of the acreage used the traditional English or archway system of training.

5.3.9 **Fertiliser Policy** (19 Holdings, 1970)

7 holdings, comprising 40% of the sample acreage, followed the A.D.A.S. recommendations, applying nitrogen usually in the form of urea, plus supplementary potassium, through the irrigation system. A further 2% applied proprietory high nitrogen fertiliser through the irrigation. 58% of the acreage was fertilised by hand application of high nitrogen fertiliser in powder or granule form. One small holding applied no additional fertiliser because of the lateness of planting.

5.3.10 **Date of first Cut**

Individual crop data is depicted in fig. 14. The earliest crop started at the beginning of March whilst the latest began cropping at the beginning of July. Fig. 15 depicts cumulative area of cucumbers planted and in crop for the 19 holdings in 1970.

5.3.11 **Labour Use** (1970)

This is one of the most difficult items of information to collect. Accurate measurement techniques would be too time-consuming and costly and so the only alternative is to rely on grower-estimates. Here three possible types of result might apply. Firstly, the grower may be so interested in labour utilisation that he may himself take particular note of exactly how much real labour time is expended on each particular task. Secondly, the grower may make rough estimates and either because he wishes to emphasise how great his costs are compared with his returns or because he fails to take account of how much slack or waste time is involved in 'day' or 'half-day' measures, he overstates the real labour usage involved. Thirdly, the grower may wish to underline his economy of labour use perhaps in comparison with other growers, and understate the real labour usage.

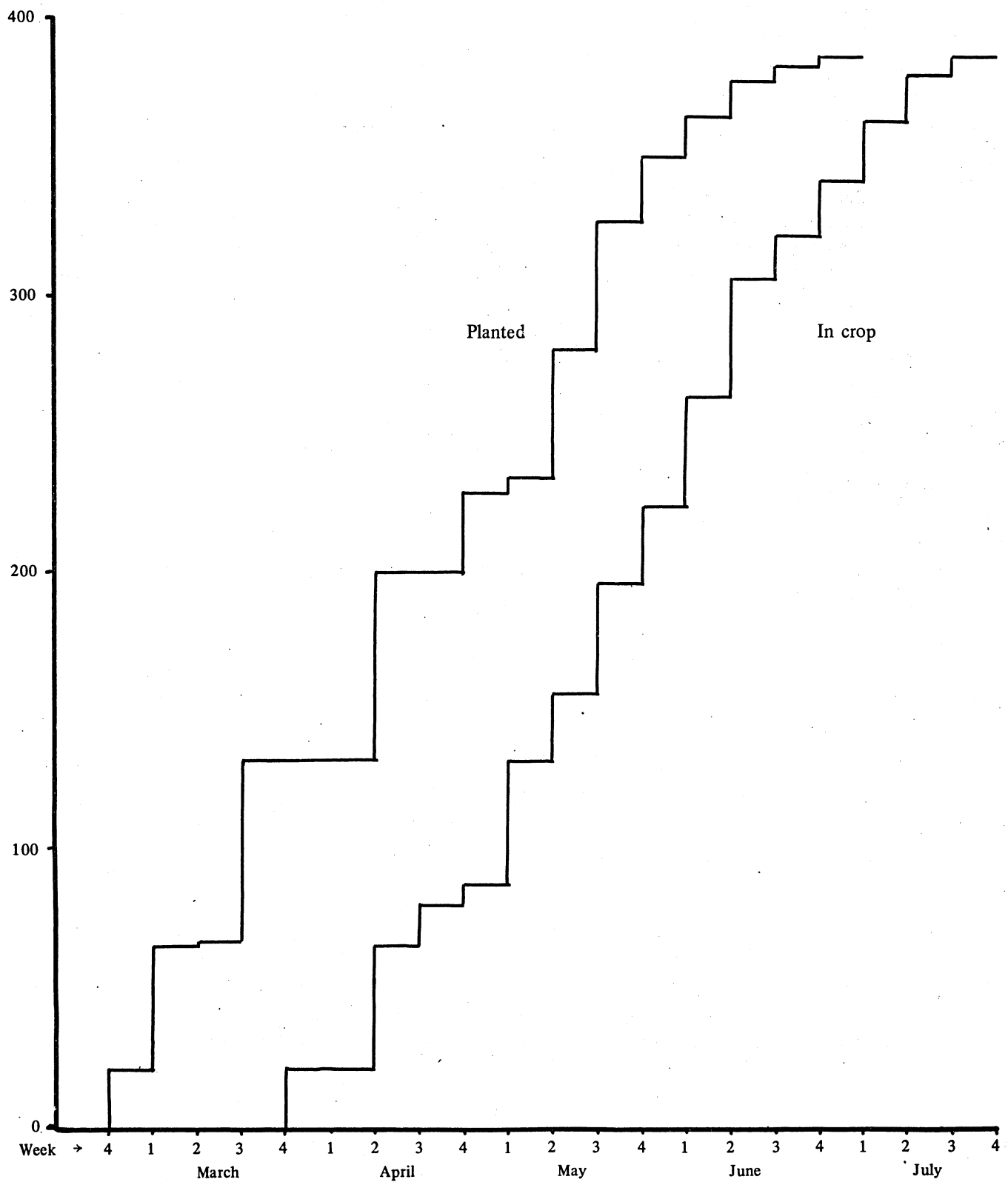
In the 1970 survey, 16 growers out of a total of 25 supplying varying amounts of information, made estimates of labour use for the various tasks involved in the production of all or part of their cucumber crop. There is probably a mixture of all three types of information described above. A good number are of type 1, whilst the presence of type 2 is hopefully balanced by type 3. The resulting averages of the 16 are therefore only crude estimates containing considerable variation between the highest and lowest figures, and should be treated with caution – particularly where sub-samples from the 16 are compared. Least variation occurred for such 'definite' tasks as planting, whilst 'preparation' activities, involving a number of different bed systems showed greatest variation.

Fig. 15

Cumulative area of cucumbers planted and in crop

29 crops on 19 holdings, 1970

('000 sq.ft.)



Activity	Number of Holdings	Average Labour Hours/ '000 sq.ft.
(a) Preparation of House	8	1.2
(b) Preparation of Base	8	1.3
(c) Preparation of Beds	10	4.5
(a)–(c) where holdings supplied only amalgamated data	6	2.8
(a)–(c) as above, combined with separated data	16	4.2
(d) Planting	16	1.0
(e) Training	11	7.6
(f) Top Dressing	4	1.2
(g) Mulching & Watering	9	1.9
(e)–(g) data supplied compound. 'Tending' activities	3	14.5
(e)–(g) as above, combined with separated data	15	10.6
(h) Shading	3	0.9
(i) Cutting	14	11.7
(j) Grading and Packing	13	8.2
(k) Clearing House	15	1.9

In the above estimates, labour hours have not been specified as either man or woman hours. Some holdings used a small proportion of female labour for various tasks except for grading and packing, where this category accounted for over 30% of the total labour. It was possible to separate 6 holdings where women alone were used for grading and packing, and 5 holdings where only men were used. 2 holdings employed both male and female packers. The resulting average labour use figures are of some interest.

	Average Labour Hours/ '000 sq.ft.
Grading and packing – Women only – 6 Holdings	4.8
Grading and packing – Men only – 5 Holdings	11.4
Grading and packing – Mixed labour force	10.7

It was thought that as the Cordon system of training is claimed to be less labour-intensive than traditional methods, it would be of interest to compare labour use for activity (e) between 2 sub-samples employing Cordon and Archway training respectively.

	Average Labour Hours/ '000 sq.ft.
Cordon System – 8 Holdings	6.7
Archway System – 4 Holdings	5.7

(4 holdings gave only compound information for 'tending' activities)

This result would not appear to bear out the claims for Cordon training although the limitations on interpretation made earlier still apply. The result does not say that with equally high standards of husbandry the Cordon system is more labour-intensive than the Archway. It could be in this instance that the 4 holdings practicing the Archway system had lower husbandry standards. They could have been later and rather shorter season crops. (In fact half of the Cordon holdings planted their crop before the 2nd/3rd week of May whilst only one of the four Archway holdings planted before this time).

It was possible to compare the 'Preparation' (a–c) labour use figures for those holdings using traditional bed systems, with those who had opted for the newer techniques of straw-bale utilisation:

		Average Labour Hours/ '000 sq.ft.
Soil, Manure or Compost Beds:	9 Holdings	4.0
Straw beds, wads or bales:	7 Holdings	4.3

Although the use of straw appears to necessitate slightly more labour than conventional beds, the difference is less than one might have presumed.

In general, whilst the data contained in this section are fair estimates of the man-hours necessary to complete specific tasks, actual expenditure on labour would be rather higher. In practice one or more workers are allocated to a particular area of glass and their wages (for management purposes) are charged against the crop involved. In addition to the tasks discussed above, there will be work performed which may not be directly connected with the crop. There will be time at the beginning and end of the day and before, during and after meal breaks when work will not be performed at the rates estimated earlier. But this is the same in all jobs and the point of these remarks is to underline that the labour-hour estimates given above are useful for planning tasks but not for financial budgets.

5.4 Average costs of inputs used in production

The following data were computed as averages, from the results of various sub-samples of holdings. Obviously, the larger the number of holdings involved (indicated below in brackets where relevant) then the more reliable is the average.

5.4.1 Seeds (costs derived from 18 holdings)

	Number	Cost	
Per acre	5450	£93)	Average unit cost 1.5p per seed
Per thousand sq.ft.	125	£15)	

5.4.2 Heating Fuel

Three types were used viz. 35 sec, 200 sec and 950 sec. Whereas some growers provided definite costs or estimates of heating fuel costs, others provided only quantities of heating fuels used. In these latter cases, price quotations (for 1970) were obtained from a number of heating fuel suppliers in the area and a mean value derived:—

	Price per gallon net of discount and rebate
35 sec.	£0.048
200 sec.	£0.036
950 sec.	£0.031

Average heating fuel costs/acre were as follows:—

35 sec.	£100	(3 holdings)
950 sec.	£553	(3 holdings)

Two holdings using 200 sec oil heated a variety of crops, making impossible a split to show costs for cucumbers alone. The average cost of heating for all installations was £477 per acre. The data of course conceal variations in the temperature regimes aimed at, and in the length of time for which heating was employed.

5.4.3 Sterilisation

Steam sterilisation:	Fuel cost only	£165 per acre	(6 holdings)
Chemical Sterilisation:	Materials cost	£136 per acre	(4 holdings)
Methyl Bromide:	By Contractor	£645 per acre	(2 holdings)

5.4.4 Insecticides and Fungicides

A variety of materials, including Parathion, Kelthane, Karathane, Dithane, Tedion, Acrex and Parathion were used in various amounts and combinations, which underlined the complexity of the struggle against the red spider mite. The total average cost of these chemicals including others for use against fungal pathogens was £42 per acre for heated glass (8 holdings) and £11 per acre for cold glass (6 holdings).

5.4.5 Fertilisers

A wide variety of proprietary compounds and "straights" were used, having an average cost of £98 per acre for heated crops (8 holdings) and £53 per acre for cold crops (16 holdings).

5.4.6 Manure/Compost/Straw

A distinction between growing systems based on the traditional compost beds and more recent straw bale techniques, has already been drawn. The average cash cost of materials for compost techniques amounted to £44 per acre (11 holdings), whilst straw-based beds cost around £132 (11 holdings).

5.4.7 Miscellaneous items

Estimates of the cost of water used were almost impossible to arrive at, and where costs per thousand gallons were known, a variation from 12.5p to 20.8p was registered. The other item, about which rather more was known, was Twine, which cost on average £12.50 per acre (21 holdings).

5.4.8 Labour

As discussed earlier under the crop management heading, the estimates of labour use for individual tasks are no real guide to the actual cost of labour used on the crop enterprise. Where labour costs are included in a later section on cost structures, the labour force per acre as given in M.A.F.F. bulletin No. 205, will be multiplied by the number of weeks the crops occupied the houses in the 1970 sample.

5.5 Yields

A sample of 12 growers provided information on yields for both 1969 and 1970. A further 7 growers provided information for 1970 only. Compared with many crops, cucumbers are separated into a bewildering variety of grades and counts, and the situation has become even more complex since the introduction of statutory grading in January 1968. Yield information was derived from sales notes for nearly all growers and estimates were made of the proportion of the crop sold retail 'at the farm gate'. It is likely that this proportion was in some cases underestimated or overlooked, but the invalidating effect on whole sample averages is likely to be small as in general it is mainly the smaller growers who sell at the farm gate or road-side.

Table 18 contains summarised yield information for the identical sample of 12 growers for 1969 and 1970, also a further 1970 set incorporating the 7 additional growers.

Table 18

Average yield of cucumbers 1969 and 1970

	Number of Cucumbers			Number of Boxes		
	Per '000 sq.ft.	Per Acre	Per Plant	Per '000 sq.ft.	Per Acre	Per Plant
12 Holdings 1969	3085	134383	31.2	248	10803	2.5
12 Holdings 1970	2633	114693	26.3	219	9540	2.2
Average of 12 1969/70	2871	125060	28.9	234	10193	2.4
19 Holdings 1970	2697	117481	27.0	223	9714	2.2

It would appear from table 18 that yields were lower in 1970 than in 1969. It is of interest to note that the area of cucumbers planted on the 12 holdings was lower in 1970, whereas for the East Riding as a whole, a 6% increase was registered. Table 18 conceals the fact, however, that some crops were grown cold whilst some were heated. It was possible to separate the yields for heated and cold crops for all but one of the 19 holdings in 1970, and these were included in table 19 with previous results for the East Riding (including the non-separated 1969 figures) and with some current information collected in the Lea Valley.

Table 19

Average yields of cucumbers per acre

Survey		No. of holdings	Average	Best
I. East Riding of Yorkshire				
(1) Hales (1962)		8	137000	–
(2) Hales (1966)				
	Heated	14	131304	186540
	Cold	8	100320	139524
(3) Giles (1969)		12	134383	176984
(3) Giles (1970)				
	Heated	7	156337	216188
	Cold	11	77929	114650
II. Lea Valley				
(4) Gill (1969)		1	–	234548
(5) Gill (1970)		25	170220	–

Sources:
(1) Hales (1964) op.cit.
(2) "Cucumber Production in the East Riding of Yorkshire, 1966" op.cit.
(3) Present Survey
(4) "Cucumber Production in the Lea Valley, 1969" op.cit.
(5) Unpublished data, 1971. University of Reading, Department of Agricultural Economics.

Notes:
a. Comparisons of the above data can only be approximate due to sample differences etc.
b. Numbers (1) (3) (4) and (5) are unspecified as to heated or cold production.
c. University of Reading data converted from weight measure.

5.6 Marketing

5.6.1 Grading

A system of compulsory grading was introduced for cucumbers in time for the 1969 season, but it was difficult to determine in the first year of the survey the real proportion of the crop falling into the various Ministry grades. At first, many growers sent produce marked only with the minimum grade label, and at the same time many wholesalers gave little or no indication on the sales notes returned to growers, just what prices the various grades fetched on the market. In analysing such sales notes, estimates had to be made based on prices received for stated grades by other growers and from other wholesalers, of what grades the produce actually fell into. An analysis of actual and estimated grade-outs is contained in table 20. It is likely that for 1969 in particular, the average percentage of Grade 1 is over-estimated, whilst for 1970 where growers and wholesalers were becoming more used to, and accepting, the grade scheme, the percentage figure for Grade 1 is nearer to the truth. Estimates had still to be made in 1970 for produce at the beginning and end of the season where wholesalers gave no indication of class, but the quantity of non-specified (and therefore estimated) produce was probably small in relation to the seasonal total and consequent computed average seasonal grade-outs. Information about the number of cucumbers per box, i.e. the count, is rather more accurate, and is reasonably consistent in both years.

In 1969 an estimated 85% of produce was classified as Grade 1 but as said earlier, this is probably an over-estimate. A concomitant of this is that the percentages of other grades (except for "bents") are under-stated. In 1970, Grade 1 constituted 63% whilst Grades 2 and 3 formed about 16% each. In both years approximately 59% of cucumbers were despatched as 12s, whilst about 16%, were 10s, 15% were 14s, 3% were 16s and 2% were 18s and the remaining 5% were mainly counts in excess of 18 (i.e. small cucumbers).

Table 20

Seasonal grading results for 1969 (12 holdings) and 1970 (19 holdings)

(a) **Average Grade-out for 1969**

Quality	Number of boxes	% of total
Class 1	79,229	85.2
Class 2	7,087	7.6
Class 3	1,975	2.1
'Bents'	4,497	4.8
Others	235	0.3
Count		
10	12,046	13.0
12	54,788	58.9
14	16,303	17.5
16	2,956	3.2
18	2,198	2.4

(b) **Average Grade-out for 1970**

Quality		
Class 1	54,903	63.2
Class 2	14,222	16.4
Class 3	14,578	16.8
'Bents'	3,090	3.6
Others	104	negl.
Count		
10	16,418	18.9
12	51,608	59.4
14	10,862	12.5
16	2,948	3.4
18	1,867	2.1

5.6.2 Packing

Out of a total of 22 growers providing information on packing in 1970, 14 sent their cucumbers to market in non-returnable cardboard containers, costing from 3.75p to 5.83p each. Additional paper for packing cost from 0.21p to 0.42p per package. Six growers used non-returnable Dutch trays costing 2.5p for second-hand and 3.3p for new trays. Additional packaging was more expensive than for purpose-built trays and cost from 0.42p to 1.25p per package. Two growers used a combination of cardboard trays and Dutch trays, whilst a further two growers needed no specific packaging as they sold only retail.

The transition from returnable wooden boxes (some of the Dutch trays were treated as returnables in the survey sample) to non-returnable trays of wood and cardboard has probably not been to the long-term advantage of producers in that it has merely increased their costs (and reduced those of wholesalers) whilst not proportionately increasing their income. The first growers to use attractively designed non-returnables would probably have profited, but when all growers use them, the premium disappears. There may however be some scope for growers to boost their sales and prices if their produce (providing the quality and grading is adequate and reliable) is packed in more attractively designed and presented boxes than their colleagues.

A significant point was made by one of the growers in the survey who pointed out that the cardboard packages are more vulnerable to damage than the traditional wooden returnable box, and this has motivated growers to some extent to use their own transport into Hull market to avoid damage in transit. This rationale is likely to become less valid in the future as the design and materials used for the manufacture of non-returnable is improved (at extra cost of course) and the point is true that some careless commercial hauliers staff can still damage packages no matter how robust the construction!

5.6.3 Transport

Most of the growers consigning to Hull wholesale market used their own transport, particularly as these were mainly the medium-sized to smaller growers whose output could be accommodated easily with the typical farm pick-up truck or van. Some firms on Hull market were willing to collect produce and a few of the sample co-operators took advantage of this service.

A small number of growers who consigned to secondary markets chiefly in the West Riding used transport facilities provided by wholesalers whilst a number using more distant markets (principally Newcastle) invariably used the services of a commercial haulage contractor.

In analysis of the results of the survey, a scale of transport charges was drawn up so that in a later section, net prices home could be derived. The bulk of produce moving into Hull from the surrounding areas of Cottingham, Woodmansey and Keyingham was charged a notional 1.25p where growers' own transport was used. Estimates were derived for growers' holdings located further away than this, and where their own transport was used to consign to more distant markets.

It was thought that the withdrawal from business of a formerly significant commercial haulage undertaking in the area would have important repercussion on market growers in that they would find it difficult to get produce to market. In the event, however, most growers have found alternative means, although it may well be that more have become dependent on Hull market than formerly. There are signs that other transport contractors who formerly did not deal with fresh produce are now willing to offer a service and in 1970 several of the growers in the survey were taking advantage of this.

As the growers were all operating independently, there was no scope for bulking loads for transport to more distant and possibly more lucrative markets in the South. The Humber Growers' Organisation on the other hand operates its own transport and is able to do this. Given the situation as it is, independent growers follow the best course in concentrating on local marketing, although it is unfortunate that they have little choice and have to depend mainly on one local primary market and secondary markets in a regional hinterland where average per caput cucumber consumption is rather less than the national average.

5.6.4 Method of Sale

In the 1970 survey, 18 growers sold their entire output on commission in the wholesale markets. A further three sold mainly on commission but some output went to shops. One grower was selling retail whilst the bulk of his crop was disposed of on commission. One grower sold "at the farm gate" whilst one maintained a stall in two Yorkshire retail markets. Eleven growers consigned only to Hull market whilst a further eleven consigned to two or more markets of which seven included Hull. In nearly all cases, growers were dealing with only one wholesaler although they had tried others in previous years. Most of the growers using more than one market had only one wholesaler in each. Eighteen growers were paying 10% commission whilst two were paying 7½%. In these latter instances, a handling charge was levied in addition. Two growers were receiving net prices only, having no indication of what prices were actually made at sale. This practice is in contravention of the Horticultural Produce (Sales on commission) Act of 1926, which stipulates that details of realisation prices, deductions and net price returned, must be given on all sales notes. Those growers receiving net prices however, appeared to be satisfied with their returns, although where no other wholesaler was being used it is difficult to see how they could have been sure of this. It is probable that in such cases, wholesalers operate a policy of "rounding" whereby they take a larger margin from good realised prices and a proportionately lesser one in times of surplus when prices are poor.

There was some evidence of the activity of agents, who do not exactly buy at firm prices, but select markets, bulk produce, arrange transport and return what are to all intents and purposes net prices. Despite the normal aversion to lack of information about what the produce actually made at sale, those growers who used such agents seemed generally satisfied with the net prices they received. The agents are part of the much maligned "army of middlemen" that we hear so much about in the popular press; but from first principles, so long as they are not monopsonists (monopoly buyers) i.e. the growers have a clear choice of selling methods, the agents can only exist if they provide a real service. If they did not do so, they would go out of business. In this case they evidently do provide a real service to the growers that use them, by their superior knowledge of market conditions and consequent selection of markets and by their organisation of collection, transportation and disposal of produce.

5.6.5 Prices

An earlier section (4.2) dealt with the various forms of price or market intelligence which are available, and cited retail, wholesale and growers' farm-gate prices for recent years. What is of more interest to us however, is not a collection of spot prices so much as the weighted seasonal average net prices which growers receive, and the series of weighted average net prices received by the survey samples of growers week-by-week through the two seasons. In order to make fair comparisons of the results of individual holdings, all net prices must be brought to the same level. Wholesalers' gross sale prices are netted of commission and other charges where these have in fact been levied. Further, a charge for transport must be imputed if this has not already been a direct cash cost. Finally the cost of packing materials is subtracted, to leave a growers' net marketed price. If the price calculated was intended to represent the return to the holding as a purely production enterprise, then the cost of labour for packing and associated marketing tasks would ideally be deducted as well, and such a figure would be validly comparable with those prices received by growers who are members of marketing co-operatives. In the event that no such comparison would in any case be possible and due to the possibilities of compounded error through a greater content of estimation than had already been carried out, this further netting of the price was not attempted.

Due to the considerable variety of counts and grades and also to the partial unrealiability of the latter, no attempt was made to derive separate prices for these. Weighted average prices were therefore calculated on a basis of per box (all grades and counts) and per cucumber (all grades). These prices are shown for an identical sample of 12 holdings in figure 16 for the two years 1969 and 1970. The two traces follow essentially the same pattern, except that prices were generally higher in 1969 with a whole-season weighted average of £0.50 per box as against £0.48 per box in 1970.

Figure 17 depicts weekly average net prices for a sample of 19 holdings in 1970 only, alongside prices calculated per cucumber. The two traces do not always follow identical patterns, thus showing a movement in the makeup of the various counts through the season. The seasonal average net price per cucumber was 4.1p for the 19 holdings in 1970, whilst that for the identical sample in 1969 and 1970 was 4.0p.

Fig. 16

Growers' weighted weekly average net price per box (£)

(12 Holdings)

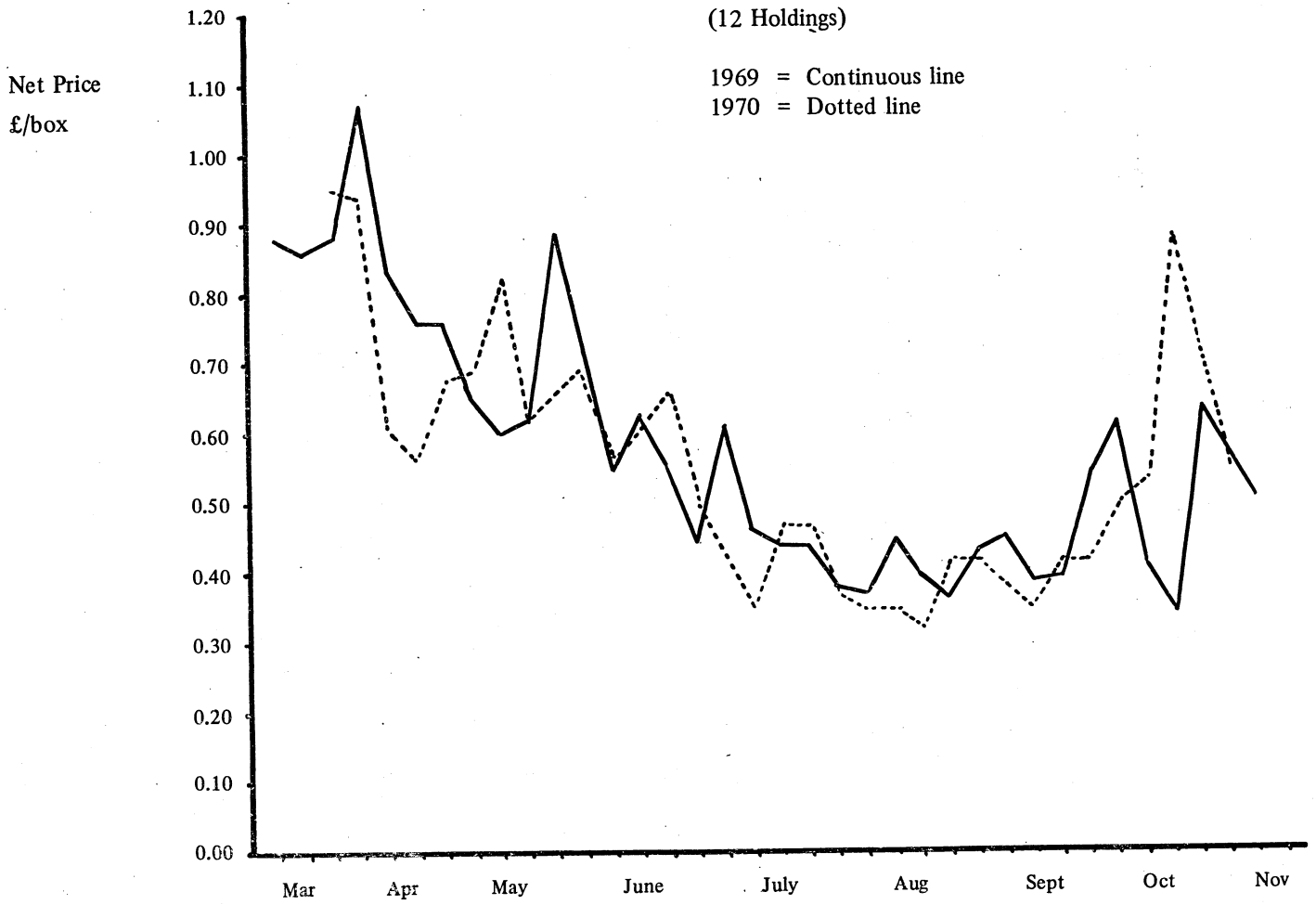


Fig. 17

Growers' weighted weekly average net price per box and per cucumber (£)

(19 Holdings, 1970)

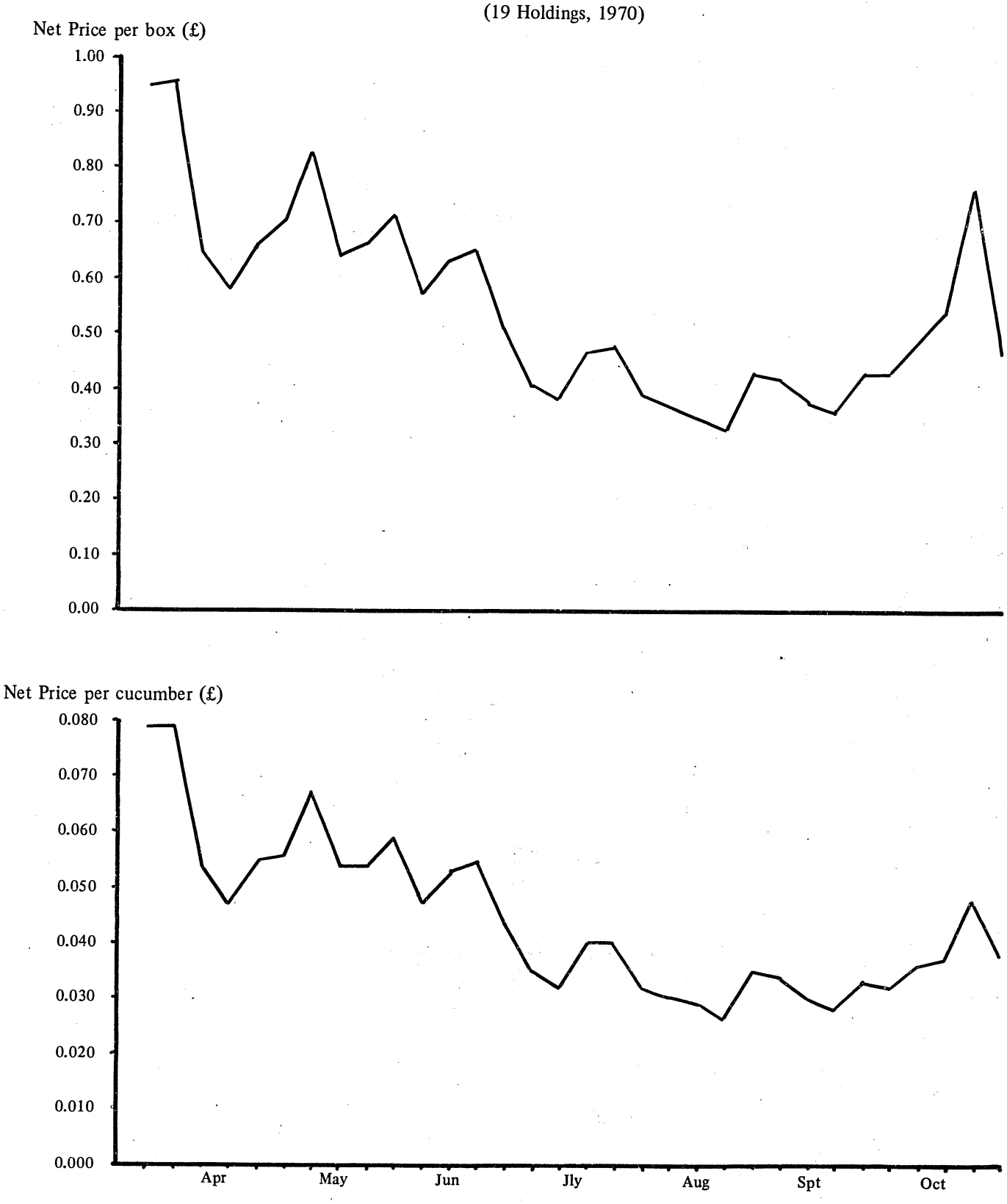


Figure 18 depicts frequency distributions of average net price per box and per cucumber for the identical sample of 12 holdings for the years 1969 and 1970.

5.6.6 Yields, marketing costs and returns per plant and unit area

The above data are shown in table 21, where they have been analysed in several different ways. Section 1(c) gives a two-year average of an identical sample of twelve holdings, comprising 6 heated and 6 cold glass holdings. Sections 1(a) and 1(b) compare and contrast the two years 1969 and 1970. Section 2 gives results for the full sample of 19 holdings in 1970, whereas this data is split into heated and cold crops in sections 3 and 4. It is interesting to note that heated yields were approximately double those for cold crops, reflecting in part, the rather longer season for the former crop. Gross and net revenues were nearly three times as great for the heated crops over the cold.

Interpretation of these and other data contained in this chapter has to take into account the fact that in such relatively small samples a great number of complicating factors such as size of enterprise, age of houses and equipment, varieties grown, growing system, grades and counts, are included, and true comparisons of "like with like" are well nigh impossible because sub-samples would consist only of one or two holdings!

Table 21

Yields, marketing costs and returns per plant and unit area

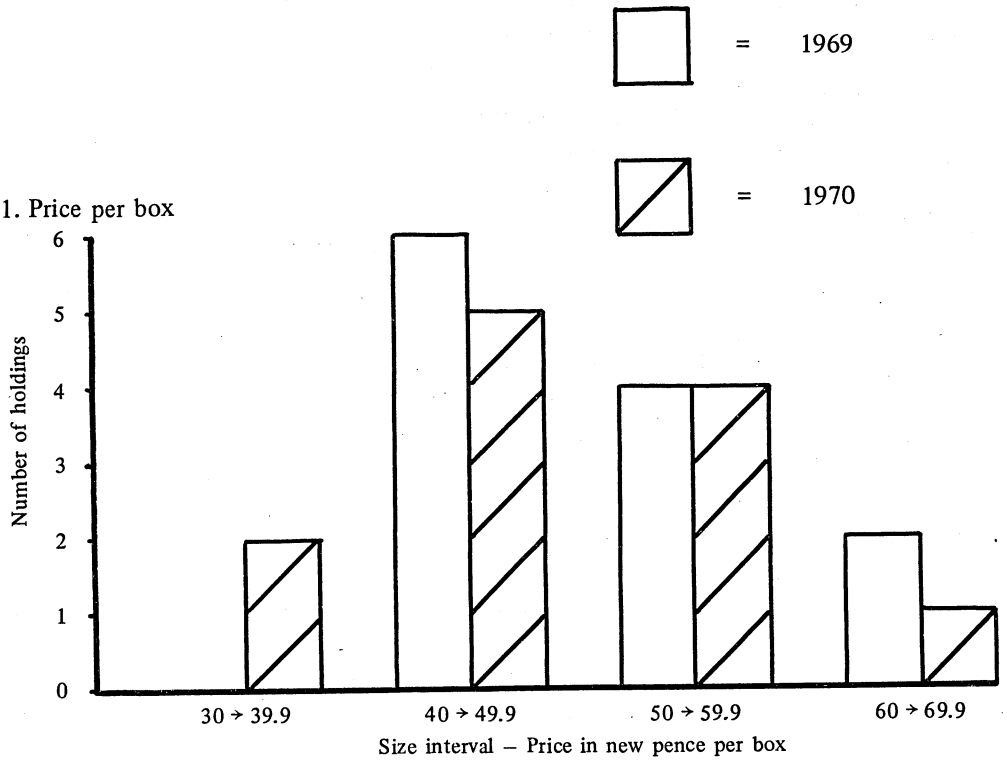
	Cucumbers (No.)	Boxes (No.)	Gross Revenue (£)	Deductions (£)	Net Revenue (£)
1. Identical Sample: 12 Holdings					
(a) 1969					
per 1000 sq'	3,085	248	152.58	27.76	124.82
per acre	134,383	10,803	6,646.38	1,209.23	5,437.16
per plant	31.2	2.5	1.54	0.28	1.26
(b) 1970					
per 1000 sq'	2,633	219	128.84	22.82	106.01
per acre	114,693	9,540	5,612.27	994.04	4,617.80
per plant	26.3	2.2	1.29	0.23	1.06
(c) Average of 2 years					
per 1000 sq'	2,871	234	141.34	25.42	115.92
per acre	125,060	10,193	6,156.77	1,107.30	5,049.48
per plant	28.9	2.4	1.42	0.26	1.17
2. Full 1970 Sample: 19 Holdings					
per 1000 sq'	2,697	223	132.98	22.59	110.39
per acre	117,481	9,714	5,792.61	984.02	4,808.59
p per plant	27.0	2.2	1.33	0.23	1.11
3. 7 Heated Crops: 1970					
per 1000 sq'	3,589	302	185.21	28.56	156.65
per acre	156,337	13,155	8,067.75	1,244.07	6,823.67
p per plant	33.0	2.8	1.70	0.26	1.44
4. 11 Cold Crops: 1970					
per 1000 sq'	1,789	136	73.47	15.20	58.27
per acre	77,929	5,924	3,200.35	662.11	2,538.24
per plant	17.0	1.3	0.71	0.15	0.57

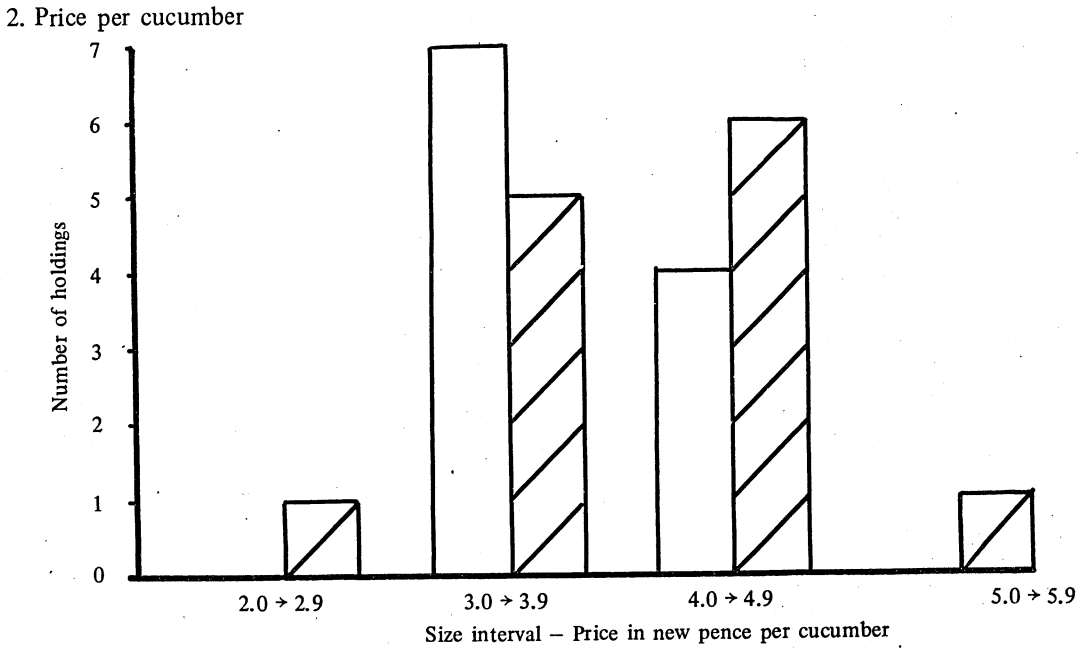
Notes:
1. "Deductions" include Commission, Handling, Transport and cost of packaging.
2. "Per plant" data subject to error for 1969 due to large content of estimation.
3. "Cucumbers" and "Boxes" all grades and counts.

Fig. 18

Distribution of weighted seasonal average net prices between holdings

(12 holdings 1969/1970)





5.7 The Pattern of production

The pattern of production for the identical sample of 12 holdings is shown in figure 19 for the two years 1969 and 1970. The total area of cucumbers grown by the sample in the former year was greater than in the latter, and this is reflected in the greater total of production. The 1969 season started earlier (3 weeks) and finished later (1 week) than 1970, and the production curve reached a fairly well-defined peak at the end of July. The curve for 1970, however, whilst following a similar path until mid-June and after mid-August, exhibited a less pronounced peak at the height of the season, in fact two rather smaller peaks occurred in mid-July and mid-August. For both years, the main season appears to run from late-May until early-September.

5.8 Production – cost structures

A breakdown of production costs and returns is a useful if not invaluable management aid, and over the years, growers, advisors and economists have struggled to produce these. The difficulty lies in specification, nearly all crops grown having some aspect of uniqueness because of the extreme degree of potential variability. The type of glasshouse, type of heating system (or absence of), site characteristics, variety, growing system, planting date, temperature and other husbandry regimes followed, and the greatest variable – that of the manager or grower himself as well as the number and collective ability of his labour force, all contribute to this variability. Strictly speaking therefore, an economist would not dare to set up a production cost and return structure because of the dangers of mis-interpretation. On the other hand, an applied economist or management advisor has to "stick his neck out" and produce such a structure, based on the maxim that almost any attempt is better than none at all.

Because of the comparatively small size of sample used in the survey, any breakdown of costs and returns will conceal a heterogeneity of the factors mentioned earlier because it would be impossible to produce average data based on a reasonable sub-sample of strictly comparable holdings. Bearing these drawbacks in mind, average cost of production data were derived from the survey, based on a heated and an unheated sub-sample of holdings, as well as individual results from both categories for the holdings which achieved the best net return per acre.

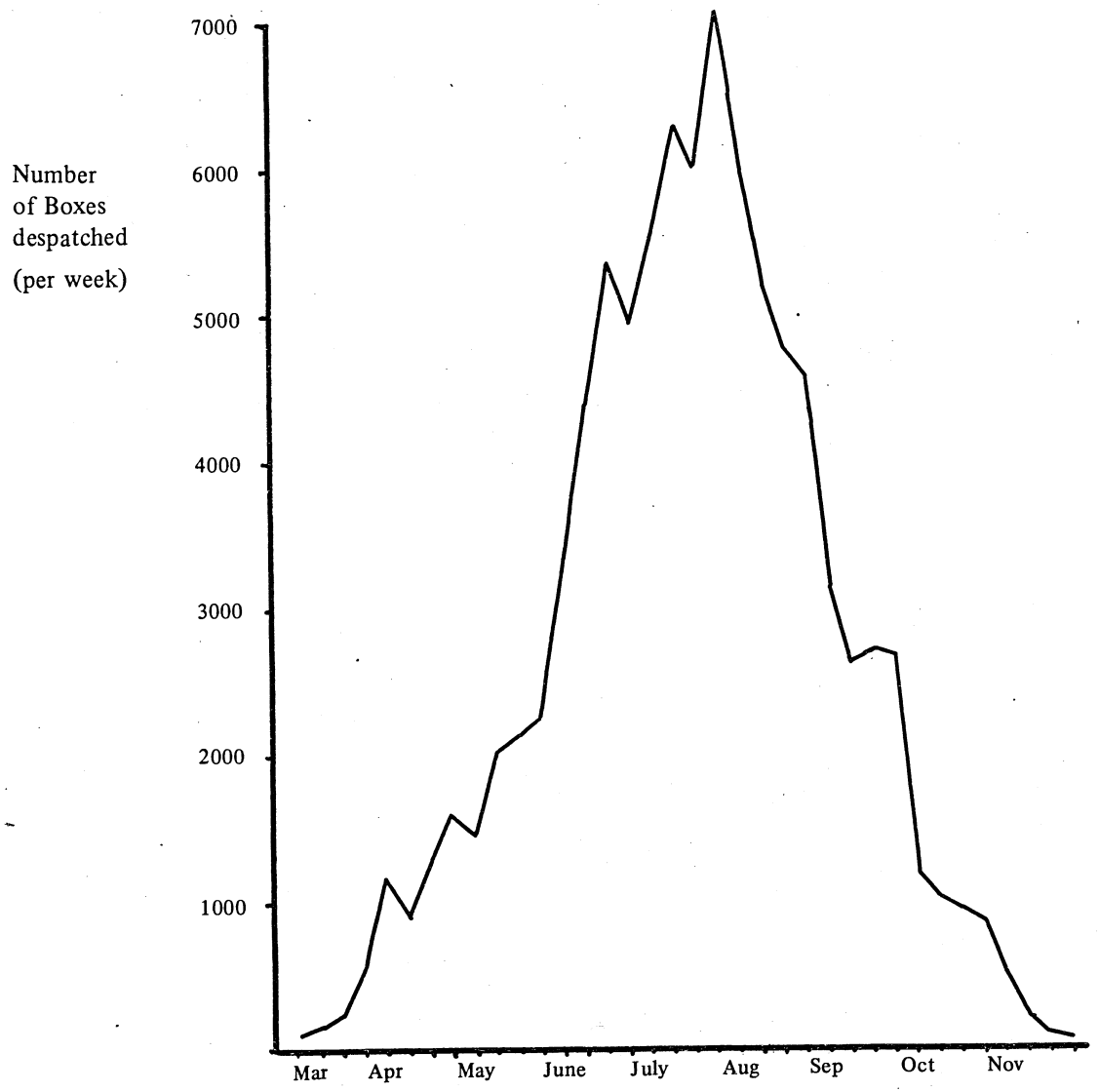
A final cautionary note refers to the rapid inflation of recent years which has seriously eroded the validity of financial data which although relevant in 1970, are now, three years later already out of date. Most growers will of course point out that although costs of production have escalated in recent years, returns on the crop sold have by no means risen adequately to compensate (see fig. 9).

Table 22 gives a breakdown of costs and returns for a sub-sample of 6 heated holdings in 1970 as well as those for the best individual holding of the group. Some results were an amalgamation of several distinct crops for which sub-division would have been impossible, and the averages contain some variation in all the production factors mentioned earlier. One of the holdings of the sub-sample referred to in table 22 had to be discarded due to incomplete data. There is little published information available with which the data contained in table 22 can be compared. At the York A.D.A.S. Glasshouse Conference in 1971 however, D.J. Fuller (then Regional Glasshouse Adviser) gave the following set of costings:–

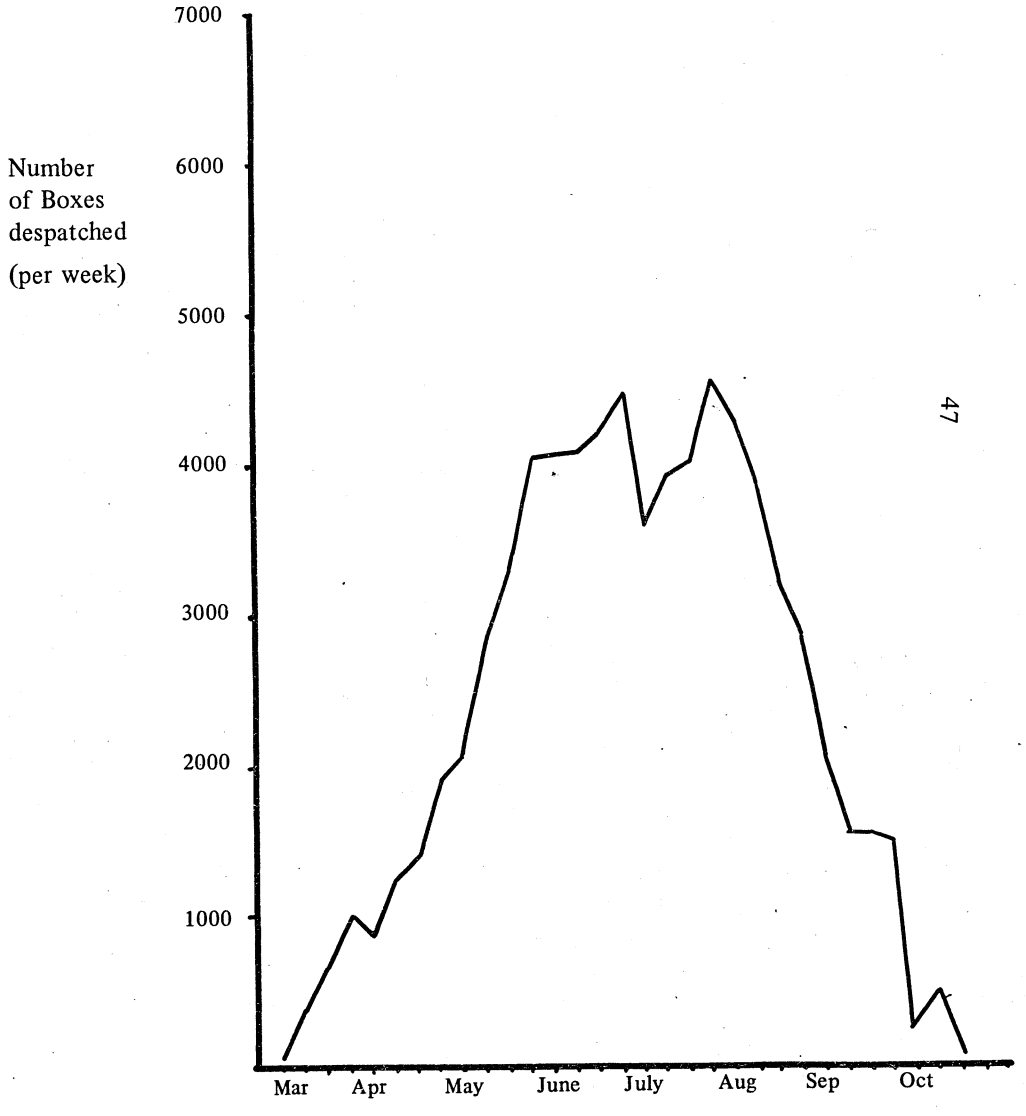
	£/acre
(a) Planting 7th February	
Returns net home	11,800
less fuel costs	2,900
Margin over fuel costs	8,900
(b) Planting 1st March	
Returns net home	8,800
less fuel costs	2,350
Margin over fuel costs	6,450
(c) Planting 1st April	
Returns net home	6,000
less fuel costs	1,800
Margin over fuel costs	4,200

Fig. 19

The Pattern of Production for 12 East Riding Holdings in 1969 and 1970



1969 [Total Crop Area = 375,296 sq.ft.]



1970 [Total Crop Area = 337,346 sq.ft.]

Based on planting dates, table 22 is most comparable with Fuller's category (c) in which it will be seen that the returns were favourably compared, but that fuel costs were considerably lower for the sample of 6. The highest recorded expenditure on fuel for an individual holding was £1,100 per acre, whereas Fuller quoted £1,800. Account should be taken of the price used, of 6p per gallon, compared with the 1970 costs quoted earlier in 5.4.2. The performance of the East Riding sample would appear to be better in net terms than those quoted in the A.D.A.S. Management Handbook for Eastern Region glasshouse nurseries (Most recent revision: 1967), but this is due mainly to the charging of partial labour costs (i.e. some would be charged against Lettuce) as against the full annual labour bill for mainly monocropping Eastern Region holdings. One is left with the conclusion that although output and return figures for the East Riding sample are fairly accurate for the year, some of the cost items such as labour and heating fuel may have been understated; but in comparison with holdings further south the scale of production is less intensive and the houses occupied for a rather shorter period of the year.

Table 22

Heated cucumbers: structure of production costs and returns per acre

(based on a sample of 6 heated East Riding Holdings, 1970)

			Average		Best
Yield (boxes)			13093		16945
Gross Revenue (£)			8240		11175
derived gross price per box (£)			(0.63)		(0.65)
LESS	Commission	824		1118	
	Boxes	640		846	
	Transport	150		212	
	Total Deductions	1614		2176	
Gross Output (£)			6626		8999
	less cost of seeds and plants		96		87
Net Output (£)			6530		8912
Cost of Materials: (£)					
	Heating Fuel	553		1100	
	Steam Sterilisation	165		218	
	Insecticides and Fungicides	42		68	
	Fertilisers	98		14	
	Straw/compost	132		207	
	Twine	13		15	
		1003		1622	
Margin over materials cost (£)			5527		7290
Direct labour					
	Man hours	2640		3655	
	Female hours	946		1161	
	Cost @ 40p and 30p respectively M	1056		1462	
	F	283		348	
	Total direct labour costs (£)	1339		1810	
Margin over Materials and Labour (£)			4188		5480

Notes:

1. Direct labour is that actually employed for the duration of the crop, and may include both regular and casual labour. In costings devised for monocropping nurseries e.g. in the Lea Valley, the entire annual wages bill might be deducted. For East Riding nurseries on the other hand, up to two lettuce crops may be grown in the same houses in one year, in addition to the cucumber crop. There will therefore be some residual cost of labour not covered by that specifically allocated to crops, and this will become part of "overheads" to which the cucumber and lettuce crops must make a contribution.

2. Labour estimates were based on the number of weeks planted and in crop. Weighted average number of weeks in crop = 22.

Table 23 shows costs and returns for unheated crops on a sample of 9 holdings in 1970. Two holdings from the sample of 11 mentioned in table 22 were discarded due to incomplete data. Even less published data is available for unheated crops, and if one compares table 23 with table 22 it can be seen that cucumbers tend to be treated as a shorter-term catch-crop on unheated holdings, with a margin over the cost of materials and labour of only £1,000 as compared with £4,000. Again, the greatest reservations attend upon the interpretation of these figures.

Table 23

Unheated cucumbers: structure of production costs and returns per acre

(based on a sample of 9 unheated East Riding Holdings, 1970)

			Average		Best
Yield (boxes)			6031		10148
Gross Revenue (£)			3239		5194
derived gross price per box (£)			(0.54)		(0.51)
LESS Commission		312		597	
Boxes		287		423	
Transport		97		211	
Total deductions		696		1231	
Gross Output (£)			2543		3963
less cost of seeds and plants			99		218
Net Output (£)			2444		3745
Cost of materials (£)					
Chemical Sterilisation		136		153	
Insecticides and Fungicides		11		2	
Fertilisers		53		48	
Straw/Compost		74		32	
Twine		9		11	
		283		246	
Margin over materials cost (£)			2161		3499
Direct Labour					
Man hours		2200		1980	
Female hours		880		792	
Cost @ 40p and 30p respectively	M	880		792	
	F	264		238	
Total direct labour costs (£)		1144		1030	
Margin over materials and labour (£)			1017		2469

Notes: As for table 22. Weighted average number of weeks in crop = 20.

CHAPTER 6

THE EAST RIDING COMPARED WITH THE LEA VALLEY

Much of the following comparison is based on the survey described in Chapter 5 and on a similar survey carried out in the Lea Valley by the University of Reading, as referred to previously. The cautionary note should be repeated, that whereas the survey in the Lea Valley included a number of larger holdings and members of Nursery Trades (the local co-operative), that in the East Riding covered no member-holdings of Humber Growers (the East Riding co-operative). It is therefore obvious that some bias is inherent in any comparison.

Data contained in chapter 4 shows the recent trend in total glasshouse cucumber area and in area per holding in both of the two regions. It was pointed out that the East Riding has been increasing its total area of cucumbers and the average size of cucumber-growing business. The Lea Valley however, has been moving in the opposite direction on both counts, to such an extent that we may expect the East Riding to become more dominant than Lea Valley in cucumber production within the next few years if the trends continue.

Despite these differences, some similarities between the two areas, emerge. The presence of a large, active Growers' co-operative in both areas has already been remarked. At the same time both areas have undoubtedly benefited from an influx of growers from abroad. It is fair to say that these expatriate growers played a leading part in the development of low-cost production, particularly the Dutch immigrants to the East Riding in the 1930s. They demonstrated a willingness and ability to invest a high proportion of their earnings in the expansion of their holdings, and a similar propensity to accept lower consumption incomes is apparent in the influx of Italian workers and growers to the Lea Valley in the recent past. The significance of the non-indigenous growers is evidenced in the Reading Survey by the fact that of the 32 co-operating holdings, two were operated by growers of Dutch extraction whilst four were operated by growers of Italian extraction. In the East Riding eight out of a total of 25 co-operating growers were of Dutch extraction. It might be unjust however to attribute the apparently greater vigour of the East Riding cucumber Industry to the greater percentage of non-indigenous growers revealed by the two surveys.

Bearing in mind that the major part of the Reading Survey was concentrated on 1969 whereas that for the East Riding was in 1970, it is interesting to note that 67% of the Lea Valley sample acreage was Archway trained and 33% Cordon trained, whilst the opposite was the case in Yorkshire where 90% of the acreage was grown on the Cordon system. As far as varieties are concerned, Butchers Disease Resister and Sporu were the main varieties grown in the Lea Valley. In the East Riding Sporu alone was the dominant variety.

Cropping in the Lea Valley takes place rather earlier as one might expect with date of first cut around the 20th March, (for the Reading sample) whilst further north it tends to be around the end of May to early June (for the 1970 East Riding sample). As one might expect for largely mono-cropping nurseries, with a longer production season available due to geographical location, Lea Valley yields are generally higher than those for Yorkshire. An interesting aspect of the comparison is that whereas all the crops surveyed by Reading were heated, only 64% of the acreage surveyed in the East Riding in 1970 was similarly treated. This difference will of course account for some of the yield disparities, and the reason for it is not difficult to deduce. A large part of Lea Valley glass is traditional, and 21 out of the 32 holdings surveyed in 1969 were growing in houses over ten years old. This traditional glass is equipped with heating systems (often of antique vintage) which is naturally used to heat the crop in any case. There would be little point in growing cold crops in houses which possessed heating systems! In the East Riding on the other hand, a considerable expansion in glass area has taken place in recent years. Growers tend to build all the glass they can and then later to invest operating profits in heating equipment. A significant part of the glass covered by the 1970 survey therefore would have been in an intermediate stage of development and although producing cold-grown crops at that time, would be scheduled for installation of heating apparatus in due course.

The yield information contained in chapter 5 was re-analysed on a basis of training system and is shown alongside Lea Valley information, in table 24.

Table 24

Average yield of cucumbers: according to training system

(boxes per acre)

	1969			1970		
Lea Valley	(18)	Archway	12,666	(25)	Unspecified	13,884
	(5)	Cordon	14,942			
East Riding	(12)	Unspecified	10,803	(5)	Archway	5,460
				(14)	Cordon	9,938

Notes: 1. Number of holdings in the sample shown in brackets
2. East Riding figures include heated and cold crops
3. Results for East Riding heated crops only in 1970:

(1)	Archway	4,876	boxes/acre
(7)	Cordon	10,970	boxes/acre

Some differences in grading results are apparent, but as mentioned in chapter 5 the validity of these results is open to question. Table 25 depicts the average grade-out for an identical sample of 12 East Riding holdings and for 25 Lea Valley holdings, in 1969 and 1970.

Table 25

Average grading results 1969 and 1970

(% of all boxes marketed)

		1969	1970
Lea Valley	I	79	79 (1)
	II	11	
	III	10	
East Riding	I	85	63
	II	8	16
	III	7	21

Note: (1) Simple average of 25 individual results

The difference in date of first cut and length of season is illustrated by the production pattern shown in table 26. Some error is concealed in these figures and is due to differences in analysis of the two regional surveys. Whereas Reading results were analysed monthly, those for the East Riding were analysed weekly. Because month start and end dates frequently occur midweek, some months (for the East Riding) may be overstated and some will be correspondingly understated. The general difference in the pattern is however valid, and similar comment applies to the income patterns shown also in table 26.

Table 26

Production and income patterns 1969 and 1970

(% of totals)

	Production				Income			
	1969		1970		1969		1970	
	LV	ER	LV	ER	LV	ER	LV	ER
February	–	–	) 1	–	–	–	) 3	–
March	1	1		–	1	1		–
April	14	4	15	4	16	7	14	5
May	22	10	23	14	24	14	27	20
June	21	19	22	21	21	21	23	25
July	20	27	15	22	18	26	13	19
August	12	25	12	26	11	20	10	20
September	8	10	)12	)13	7	8	)10	)11
October	2	4			2	3		

Lea Valley = LV
East Riding = ER

CHAPTER 7

FUTURE DEVELOPMENTS

The situation in cucumber production in this country was described in the introduction to this report as being very dynamic indeed. This dynamism shows no sign of abating. The vigorous quest for new and better varieties continues at home and abroad and the willingness of East Riding growers in particular, to experiment with these, is shown in the list of varieties grown, shown in section 5.3.1. Whether development will be towards varieties producing a larger number of smaller cucumbers to obviate the present cutting into two at retail level, is not certain. It is probable though, that the new varieties will be disease and physiological disorder resistant and may be bred for characteristics which make them easier to train and manage.

The previous chapter mentioned the large area of new glass which has been erected in the East Riding in recent years. This of course has occurred over the whole country, particularly under the impetus of the Horticultural Improvement Scheme. As many growers follow a step-by-step policy in investment, it is likely that a great deal of this glass will be equipped with heating apparatus before long[1]. In the long term, although existing varieties of tomato and cucumber grown out of doors in Southern Europe are largely unacceptable to the English taste, there are no grounds for supposing that with a suitable research and breeding programme acceptable varieties capable of being grown in the open could not be produced. Some growers will therefore tend to be a little sanguine as to their likelihood to be still growing tomatoes and cucumbers in ten to twenty year's time. Investments may well tend towards the East Yorkshire model of relatively low-cost glass for tomato and cucumber production.

Growers in East Yorkshire are already facing competition from industry for the available labour-force. This competition is unlikely to abate and the natural result will be a steady increase in the cost of hiring labour. This in turn will force growers to examine even more critically their use of labour and to adopt training systems such as the Cordon system and more mechanisation wherever possible, to keep their total labour input bill under some measure of control. The same comment applies nationally. West Germany has attempted in recent years to take advantage of labour from European countries with lower labour-market prices, but with growing internationalisation of trade unions in the future, this source of cheaper labour will gradually be closed and is unlikely to have any great impact on British Horticulture.

As part of the survey of 25 East Riding holdings, growers were asked what their future intentions were, both in regard to cucumber production as such and to their total glasshouse area. Three growers, with 18% of the sample cucumber acreage, said that they intended to expand their cucumber production; three growers, with 17% of the sample cucumber acreage, said that they intended to reduce their cucumber production; the remaining 18 growers with 65% of the acreage, intended to continue production at approximately the same level. On balance, therefore, cucumber production from the survey sample would remain largely unchanged in terms of acreage in the near future. Available information would suggest that production on holdings coming under the Humber Growers' Marketing Organisation would continue to expand. Total glass area on the 25 holdings will almost certainly increase, as 9 growers with 24% of the sample glasshouse acreage indicated definite plans for expansion. A further 5 rather larger holdings with 39% of the sample glasshouse acreage indicated plans for modernisation (such as heating of existing cold glass and installation of automated equipment) which would make for an expansion in productive capacity. Ten holdings representing 37% of the sample glasshouse acreage had no definite plans for expansion.

It seems likely that the continued success of the commercial activity of Humber Growers may result in further additions to their membership, alongside the existing expansion plans of existing members, thus bearing out the increase in the dominance of East Riding cucumber production indicated by statistical evidence elsewhere in this report. An increase in the power of growers' organisations elsewhere in the country is probable, so that we may expect home cucumber production to be increasing in commercial strength as well as technological competence, at a time when trade barriers within the enlarged E.E.C. are gradually being dismantled.

A recent report[2] by the National Economic Development Office (N.E.D.O.) commented that the marketing of cucumbers in the U.K. compared more favourably with marketing in the Netherlands than that of many other crops. The U.K. tariff on imports is to be phased out in five stages, from 1st January 1974 until 1st January 1978, and it seems likely that as the amount of tariff has only represented something like 12% on the Dutch wholesale price, the effect on U.K. wholesale price will be small. The home industry has come through a period of considerable investment in capital facilities, equipment and automation. Marketing institutions particularly at the grower-end are still developing whereas the Dutch reached a high level of marketing efficiency some years ago. Thus the improvement and further sophistication of home growers produce-marketing will probably keep step with the progressive removal of the tariff on cucumbers and may even result in their share of the market being greater in 1978 than it is now.

(1) This development may be temporarily delayed owing to the exhaustion of H.I.S. funds, and pending the inauguration of new capital investment assistance arrangements under E.E.C. regulations.

(2) "Glasshouse Crops and Mushrooms". A report by the Economic Development Committee for Agriculture. May 1973. N.E.D.O. Millbank Tower, London.

REFERENCES CITED IN THE TEXT

1. *Bean Bros.* (1972) Letter to the editor of "The Grower" 25th November 1972.
2. Board of Trade (1970) Press Notice No. 34 3rd September 1970.
3. *Bullen, E.R.* (1971) "Livestock in Rumania" Agriculture. Vol. 78 No. 6.
4. Central Statistical Office. "Monthly Digest of Statistics". H.M.S.O. London.
5. *Ellis, P.G.* (1967) "Horticulture in Britain". M.A.F.F. H.M.S.O. London.
6. *Folley, R.R.W.* (1968) "The Role of Credit in Business Growth" Wye College. Department of Economics, University of London.
7. *Fuller, D.J.* (1971) Paper read at the York (A.D.A.S.) Glasshouse Conference 1971.
8. *Gill, A.H.* (1970) "Cucumber Production in the Lea Valley, 1969". University of Reading, Department of Agricultural Economics. Agricultural Enterprise Studies in England and Wales. Economic Report No. 2.
9. *Gill, A.H.* (1971) "Cucumber Production in the Lea Valley, 1970". University of Reading, Department of Agricultural Economics. Unpublished data.
10. "The Grower" 10th June 1972.
11. "The Grower" 2nd September 1972.
12. "The Grower" 28th October 1972.
13. *Hales, A.W.* (1964) "Glasshouse Production in the East Riding of Yorkshire". University of Leeds, Department of Agricultural Economics.
14. *Hales, A.W.* (1966) "The Development of Horticulture in the East Riding of Yorkshire". Scientific Horticulture. Vol. XIX 1967. pp 87–95.
15. *Hales, A.W.* (1968) "Cucumber Production in the East Riding of Yorkshire". University of Leeds, Department of Agricultural Economics.
16. *Matthewman, P.D.* (1973) "The Logistics of Marketing of Selected Salad Crops in the Yorks/Lancs Region". University of Leeds, Department of Agricultural Economics.
17. Ministry of Agriculture, Fisheries & Food. "Domestic Food Consumption and Expenditure". Annual Reports of the National Food Survey Committee. H.M.S.O. London.
18. Ministry of Agriculture, Fisheries & Food. "Horticultural Management Handbook". (Internal A.D.A.S. circulation only).
19. Ministry of Agriculture, Fisheries & Food. "Manual of Cucumber Production". Advisory Bulletin No. 205. H.M.S.O. London.
20. National Economic Development Office. "Glasshouse Crops and Mushrooms". A Report by the Economic Development Committee for Agriculture, May 1973. N.E.D.O. Millbank Tower, London.
21. *Nicholson, J.A.H.* (1972) "Early Tomato Production". Agricultural Enterprise Studies in England and Wales. Economic Report No. 11. Wye College, School of Rural Economics and Related Studies. University of London.
22. "Overseas Trade Accounts of the United Kingdom". Board of Trade. (Blue Books) published monthly by H.M.S.O. London.
23. *Shepherd, F.W.* (1970) "Horticulture in Rumania". Agriculture. Vol. 77, No. 11.
24. *Shepherd, F.W.* (1972) Private communication.
25. *Sutherland, A.M.* and *Batty, G.W.* (1966) "The Development of Intensive Horticulture in the East Riding". N.A.A.S. Quarterly Review No. 70. pp 57–61.

OTHER PUBLICATIONS IN THIS SERIES

No. 1	Lowland Sheep: Production Policies and Practices Editor: W.J.K. Thomas University of Exeter October 1970	50p
No. 2	Cucumber Production in the Lea Valley Profitability on a Sample of Nurseries By A.H. Gill University of Reading November 1970	30p
No. 3	Oilseed Rape: A study of its production based on economic surveys of the 1967, 1968 and 1969 harvests By J.A.L. Dench University of Reading December 1970	50p
No. 4	Outdoor Pigs: Report on an economic investigation By M.A.B. Boddington Wye College (University of London) August 1971	75p
No. 5	Year round Cauliflower production in Lincolnshire, Kent and Cornwall 1969–70: including trends in production, imports and prices of competing and complementary brassica supplies By Helen M. Cole University of Exeter October 1971	50p
No. 6	The Economics of Carrot Production and Marketing in Britain: A Commodity Study By W.L. Hinton University of Cambridge December 1971	50p
No. 7	Sugar Beet: An Economic Report By M.C. Thompson & F.G. Sturrock University of Cambridge December 1971	20p
No. 8	Lowland Sheep: An economic analysis of lamb production, 1970 Editor: W.J.K. Thomas University of Exeter December 1971	30p
No. 9	Two Systems of Beef Production on Arable Farms: An economic study on farms in the East of England, 1968–1970 By I.G. Simpson University of Leeds February 1972	40p
No. 10	Field Beans as a Break Crop By W.S. Senior University of Nottingham February 1972	30p

No. 11 Early Tomato Production:
Fourth Report on the British Isles Tomato Survey
By J.A.H. Nicholson
Wye College (University of London)
March 1972

No. 12 Glasshouse Lettuce: An Economic Survey in Lancashire
University of Manchester
February 1972 20p

No. 13 Break Crops: An Economic Survey in Southern England – with a technical appraisal by A.D.A.S.
By several authors
Accompanied by a break crop bibliography compiled by
Miss Wendy Booker
University of Reading
May 1972 75p

BRISTOL	Agricultural Economics Research Unit Department of Economics University of Bristol 79 Woodland Road Bristol BS8 1UT
CAMBRIDGE	Agricultural Economics Unit Department of Land Economy University of Cambridge Silver Street Cambridge CB3 9EP
EXETER	Agricultural Economics Unit Department of Economics University of Exeter Lafrowda, St. German's Road Exeter EX4 6TL
LEEDS	Agricultural Economics Department University of Leeds 14 Blenheim Terrace Leeds LS2 9JT
LONDON	School of Rural Economics & Related Studies Wye College (University of London) Nr Ashford Kent
MANCHESTER	Department of Agricultural Economics The University Manchester M13 9PL
NEWCASTLE	Department of Agricultural Economics The University of Newcastle upon Tyne Newcastle upon Tyne NE1 7RU
NOTTINGHAM	Department of Agriculture and Horticulture University of Nottingham School of Agriculture Sutton Bonington Loughborough Leics LE12 5RD
READING	Department of Agricultural Economics and Management University of Reading Building No. 4 Earley Gate Whiteknights Road Reading RG6 2AR
WALES	Department of Agricultural Economics University College of Wales Institute of Rural Science Penglais Aberystwyth Cards SY23 3DD