

## **The production of fruit and vegetables in kitchen gardens and allotments**

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The historical aspects of the provision of allotments, originally for the rural labourer who lost his grazing land during the various Acts of Inclosure but also, later, on the outskirts of large towns, were reviewed in the report of the Departmental Committee of Inquiry into Allotments (Thorpe Report; Ministry of Land and Natural Resources, 1969). Until recent times the production of vegetables and fruit in gardens and allotments was economically and nutritionally important for the poor, often the only supplement to their low wages. During the 1914–18 and 1939–45 wars home production of food again became important, indeed possibly vital to our survival. There was an incentive to dig since the produce supplemented an adequate but dull ration. In both wars the number of allotment plots rose to 1 400 000 (Ministry of Land and Natural Resources, 1969) and in 1944 it was officially estimated that 10% of the food grown in this country was produced on allotments and gardens (Hansard, 1944). In 1941, 1 300 000 tons were produced annually on allotments alone (Stamp, 1962).

From 1950 to 1968 there was a steady decline in the number of plots cultivated from about 1 200 000 in 1950 to only 600 000 in 1968 (Ministry of Land and Natural Resources, 1969). This decline and all aspects of allotments were examined by a Committee of Inquiry, the report of which was presented to Parliament in 1969. Essentially it found that few new plot holders were coming forward and that the reasons for giving up 70% of the plots vacated were death, age, illness or movement from the district. At the same time 60% of flat dwellers questioned in Birmingham were not interested in plots or thought it cheaper to buy vegetables and less than half of those who considered cultivating a plot were willing to travel more than a mile to dig. Increasing affluence during this period, more leisure time, the motor car, smaller gardens and the novelty of year-round availability of out-of-season and foreign produce were all put forward as arguments for the decline in interest in allotments and in the cultivation of kitchen gardens. Many of the over-grown allotment sites were requisitioned by their owners, usually local authorities, for purposes which removed them permanently from allotment use.

In 1968 there were 600 000 plots occupied and an insignificant waiting list, but since then there has been an ever increasing demand for allotments. In September 1975 there was a waiting list of 85 000 and in September 1976 of 117 600 in spite of more land being made available. There are now 800 000 plots being cultivated (Information from the National Society of Leisure Gardeners). The reasons for this renewed interest in allotments, and probably also in kitchen gardening, are as varied as those for the earlier decline. The major reason appears to be the high cost

and generally poor quality of retail vegetables and the disenchantment with frozen ones. Many families feel they cannot afford to buy all the vegetables they would like and if they grow their own they can use the money saved to buy extra fresh fruit which they cannot grow. The majority of home producers insist, usually justifiably, that their own produce, though perhaps a little blemished, is fresher and has more flavour than retailed produce.

With this background in mind, the probability that the world prices of food will not decline and the increasing awareness of the need for good nutrition among the population, there is every chance that the demand for plots of land for growing fruit and vegetables will increase; a consideration of the economic and nutritional factors is therefore important.

In Table 1 I have compared value of produce from two vegetable plots with other land uses, both intensive and extensive. Even allowing that farm-gate prices may be only one-third of retail prices and that the produce from the plots was costed at retail prices the economics of the plots appear very favourable though no labour costs have been included. Value of produce is not the only criterion, one should also consider the energy yield per acre (Heath, 1976). In this case, only if the allotment plots grew potatoes, peas and beans would they compete favourably with extensive agriculture since the energy derived from most vegetables is fairly low. However, most gardens and many allotment sites would not be suitable for extensive agriculture because of the size or situation. In seeking land for allotments one should consider, therefore, not only economic value but also the nutritional value of the cropping system it might displace.

Table 1. *Relative economics of land use*

Land use	Crop Year 1975			
	Value of all crops £/Acre	Costs £/Acre cropped	Gross Margin £/Acre	
Wisley model vegetable plot (1) 91 sq yds	6582 (123.4) <sup>A</sup>	1064 (20) <sup>A</sup>	5518 (103) <sup>A</sup>	Retail prices
Estimate for average standard 300 sq yds plot	2400 (150) <sup>A</sup>	320-480 (20-30) <sup>A</sup>	1920-2080 (120-130) <sup>A</sup>	Cost of seeds and fertilizer only No labour costs included
Horticultural glass (2)	27091	24108	2983 [8949] <sup>B</sup>	Tomatoes and cucumbers
Glass and open ground (2)	4219	3373	844 [2532] <sup>B</sup>	Tomatoes and vegetables
Vegetable farms (2)	508	386	122.1 [366] <sup>B</sup>	Vegetables
Mixed fruit and vegetables (2)	602	498	105 [315] <sup>B</sup>	Vegetables, soft and top fruit
East Anglia upland arable (3) average 608 acres	138	31.1	107 [320] <sup>B</sup>	70% winter wheat
Fen arable over 100 acres (3) average 336 acres	373	57.4	316 [948] <sup>B</sup>	10% potatoes (37% of gross margins)
Fen arable under 100 acres (3) average 65 acres	411.8	82.8	328.9 [987] <sup>B</sup>	Cereals 46% Potatoes 15.5% (56% of gross margins) Beet 14.3% Potatoes 18% (16% of gross margins) Cereals 45% Potatoes 18% (16% of gross margins) Beet 18%

<sup>A</sup> Plot values in brackets ( ) <sup>B</sup> ×3 for retail comparison

(1) Figures calculated from (1) Randall 1976

(2) From Hinton and Housden 1977

(3) From Thompson and Sturrock 1976

It is impossible to obtain more than a fair estimate of the costs of home-grown produce. Yields will depend on soil type and fertility, the climate and very much on the expertise of the gardener. The value of crops will depend on local retail prices

and whether all the crops harvested are eaten or stored by the family. It is sobering to remember that many people make a living growing vegetables and fruit for sale at wholesale prices! In the costs of production, which must include seeds and fertilizer (20 lb potassium sulphate and ammonium sulphate and 50 lb of superphosphate per 300 sq yds annually) (*The Vegetable Garden Displayed*), one should consider the time of the gardener. For some, gardening is a hobby, to others a necessary chore, but growing vegetables can only really be considered uneconomic if the time spent in their cultivation could be spent earning or saving money to a greater value than the value of the produce, less costs. A garden often has to be kept weed-free anyway and a well kept lawn, though with its rewards, is as demanding of time and money as a vegetable patch.

An area of 400–500 sq yards of average land in good heart with moderate husbandry, requiring an average of 2–4 h work weekly throughout the year, will, in conjunction with a deep freeze, keep a family of five well supplied with fruit and vegetables throughout the year. From the second year after planting, a plentiful supply of soft fruit should be available and after a few years, with some ingenuity in the use of dwarf trees and training, a large proportion of the family's requirements for plums, pears and apples could be met. There may be periods of heavy overproduction either fortuitously, or by design, hence the deep freeze.

Small, even tiny, plots can make a considerable contribution if care is taken in choice of varieties which give high yields relative to the land occupied and labour necessary for their cultivation, or have short retail shelf-lives. Quite exotic varieties may be grown in favourable sites or with the protection of cloches or frames. A cold greenhouse will repay its cost in a few years if suitably sited, but in general, heating small greenhouses for the production of early tomatoes, lettuce and cucumbers is not economic.

Home production is doubly advantageous for those who are concerned about residues from the armoury of sprays used commercially. Similarly those who shun the use of artificial and even animal manures could find it cheaper to grow much of their own produce than buy it from health food shops. It must be stressed, however, that except for the most fertile soils it is doubtful if high productivity and soil fertility can be maintained using vegetable compost without some supplementation with inorganic fertilizers.

There is no evidence of which I am aware to suggest that the nutritional value of vegetables and fruit home grown under good conditions is any different from those produced commercially, although commercially some fruits are picked unripe to decrease damage and spoilage during transit to distant markets and this results in a poorer product as does wilting and bruising. The chemical composition of plants is genetically determined so that plants grown under similar conditions will have similar compositions, though plants grown on fertile soil will produce more protein, carbohydrate and fat per acre than similar plants grown on poor soil. Soil fertility has not been shown to affect vitamin content, though the levels may be affected by the state of maturity at harvest and climatic conditions (*Nutrition Reviews*, 1976).

Our climate puts severe restraints on the varieties of food plants which we can grow; of the major nutrients, only in carbohydrate could one be easily self-sufficient by growing potatoes which are also an important source of protein and vitamin C. Root crops, peas and beans also contain carbohydrate and whilst all plant tissues contain protein only potatoes, peas and beans are major sources. Normally peas and beans are used while immature, tender and sweet and so do not yield protein and carbohydrate to their maximum potential and it is only in certain areas that our climate would permit the easy cultivation of peas and beans for their mature seeds when the energy yield per acre compares favourably with cereals (Health, 1976). Domestically, sufficient land is not usually available to provide enough protein by this means.

The majority of vegetables grown are normally eaten raw or cooked as a source of minerals, vitamins and possibly fibre, though the plant breeders usually select for low fibre because this results in a tender product. Carefully harvested vegetables and fruit are a rich source of vitamins A and C and also B<sub>1</sub>, and B<sub>2</sub> and B<sub>6</sub> (Cuthbertson, 1976).

It was suggested in the joint report of the Royal College of Physicians and the British Heart Society (1976), *The Prevention of Coronary Heart Disease*, that an increased intake of fresh vegetables would benefit the population in Britain, mainly because of the increased intake of minerals, vitamins and fibre, but also because of the bulk there would be a significant decrease in the intake of high energy components of the diet. Vegetables have a low fat content with predominantly unsaturated fatty acids. With home-grown produce one tends to eat more than one would consider it economic to buy and few vegetables other than potatoes are eaten in sufficient quantities for one to be concerned about their energy contents. Children accustomed at an early age to eating a variety of vegetables carefully cooked are less likely to develop the dislike, especially of leaf vegetables, not uncommon in the British.

The foregoing points suggest that there is much to be gained by encouraging the home production of fruit and vegetables and, provided the land used for new allotments does not impinge on areas of highly productive arable land, the effects on production in this country will be small, possibly the imports of vegetables would be cut. To double the present number of allotments would require an increased production or more economic use of seeds which would doubtless be solved and there would be an increase in demand of about 7000 tons annually of potassium sulphate and ammonium sulphate and 18000 tons of superphosphate. If private garden use also expanded a further demand would have to be met, but from allotments alone one might expect a minimum of £120 000 000 worth of produce annually.

For the inexperienced gardeners some guidance would be necessary in the 'Dig for Victory' style; straight forward, no frills gardening. *The Vegetable Garden Displayed* and *The Fruit Garden Displayed* both from the Royal Horticultural Society are two such books, another *The New Vegetable Growers Handbook* by

A. J. Simons, originally published to assist those enthusiasts in 1940 but now reprinted, seems very appropriate.

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