

Garden seeds in England before the late eighteenth century: I. Seed growing

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Abstract

The innovation and diffusion of commercial garden seed production in England forms the core of this paper, the first of two on garden seeds. Following some remarks on seed production in the three centuries before 1600 the nature, process and adoption of the innovation in agriculture that seed production represented is examined. It is concluded that Dutch immigrants in the sixteenth century and their descendants played a vital role in the initial introduction and subsequent spread of garden seed growing in England. The long continuity of production in some areas was determined by local soils and climates, as well as favourable social and institutional circumstances. Contemporary estimates of prices and costs show that garden seed growing was sometimes highly profitable, although uncertainty of yield and foreign competition could bring about losses. Using evidence from probate inventories, the way in which seed production was assimilated into farming at Sandwich is reviewed, and the paper also covers garden seed imports in the period.

IN *The Agrarian History of England and Wales*, V, Joan Thirksk has shown that, between 1640 and 1750, the production of many new crops and livestock flourished while traditional agriculture was depressed. Garden seed growing was one aspect of the 'Variety, diversity, and unique specialization', which were characteristics of the period. The innovations in crops and livestock each made different demands on labour, land, capital and enterprise and it was only where their particular requirements were well matched to local conditions, and the requisite skills were known or could be acquired, that the innovations could take hold. Peculiar elements which shaped the development of garden seed production and marketing include the important role of foreigners in the process of innovation, technical difficulties and uncertainties of production balanced by the possibility of high profits, competition from imports, dependence on a retail market subject to fashion, and the emergence of seed growing from another innovation — market gardening.¹

This study overlaps the agricultural depression between 1640 and 1750, dealing mainly with the period 1600 to the late eighteenth century. It is divided into two parts: the first, below, concentrates on garden seed growing, beginning with a brief survey of production and trade before 1600. The nature and course of the innovation and diffusion of seed production in the seventeenth and eighteenth centuries will be considered, and the regions where seeds were produced examined. The paper will also cover techniques of production; how seed fitted into existing agriculture; costs, profits and risks to the individual grower; and competition from imported seeds. The discussion will concentrate on vegetable seeds: these formed the bulk of English output and little information on the commercial production of other garden seeds has so far come to light. The second paper will cover the trade in garden seeds, concentrating on London retail seedsmen. The topic will be examined against the background of major changes in retailing in the late seventeenth and eighteenth centuries.

A trade in garden seeds of sorts existed in the three centuries before 1600. Most

¹ Joan Thirksk, (ed), *The Agrarian History of England and Wales*, V, 1985, chapter 15, and p. 167.

seeds were purchased at fairs and markets, although in the sixteenth century London shopkeepers began to stock them. Seeds were bought by gardeners employed to tend the monastic and royal gardens created for herbs, flowers, fruit, vegetables and recreation. The gardeners of the richer inhabitants of London, many of whom produced surplus produce for sale, or leased the gardens from their owners, undertaking to provide a pleasant garden while at the same time making a living from selling the produce, also needed seeds, as did many humble folk in town and country who kept gardens to grow a few vegetables for themselves. The early trade in seeds was limited by transport difficulties, the narrow range of plants in cultivation and the poverty of most gardeners. The seeds of leeks, onions, and coleworts, major elements in the diet of the people, were most commonly bought and sold.¹

Two merchants who met at Huntingdon in 1296 formed a partnership to supply leek seed to Scotland by packhorse. Several journeys were made before the partnership split up. We must suppose others traded in seeds on a similar scale. Merchants purchased their seeds from home or abroad, although evidence of English producers is thin. Some seed did come from the surpluses of monastery gardens: Brother John, gardener at Beaulieu Abbey, in 1269 had leek seed worth 20d and onion seed worth 22d for sale. Onion seed by the hundredweight was shipped through east coast ports from the Low Countries in the early sixteenth century.²

Royal gardens, monasteries and colleges purchased onion and leek seeds in large quantities: the Rotherhithe Palace gardener

in 1354 bought 12lb of leek and 12lb of onion seed; in 1341 Queen's College gardener in Oxford paid 4s 11d for leek, onion, and garlic seed; the monastery at Sion bought 9lb of onion seed in 1490. Other vegetable seeds were obtainable: the Rotherhithe Palace gardener bought 3 gallon of 'vegetable seed' for 7s in 1354 and the gardener at the Abbot of Westminster's manor of La Neyte bought lettuce, savory, borage, chervil, and violet seeds in 1327.³

Most gardeners, however, probably still grew their own seeds, either from poverty or the lack of a reliable supplier. John the Gardener in his fourteenth-century treatise on gardening suggested that onions standing for seed should be propped up with ash forks. They would be ripe by Lammas and the seed was to be harvested and dried on a cloth. Thomas Tusser in 1573 still assumed that, in looking after the kitchen garden:

Good huswives in sommer will save their own
seedes, Against the next yeere, as occasion needs.

Significantly, in view of the absence of a comprehensive seed trade, he continued,

One seede for another, to make an exchange,
With fellowe neighbourhould seemeth not
strange.⁴

I

In discussing the nature of the innovation in seed growing and its diffusion, paucity of data is a problem. Seed growing was an occupation of ordinary men and women, copied from each other and not from gentry pioneers: as such, few records of individual endeavour remain. Unlike another intensive crop, tobacco, it did not arouse political controversy and generate official and legal records. Mark Overton has described the problem thus: 'the limitations of the historical record inevitably impose an element of

¹ Harvey, *Medieval Gardens*, 1961; Teresa McLean, *Medieval English Gardens*, 1981a.

² Harvey, *op. cit.*, pp. 22, 76; McLean, *op. cit.*, p. 27. Chapter 5. J. E. T. Rogers, *A History of Agriculture and Farming in England from 1250 to 1763*, Oxford, 1866-1902, I, p. 223, II, p. 394, III, pp. 206, 355, 359, 365, IV, pp. 275, 277; Dr H. J. Simz, *Breuvier '91 de Conclusions van der hande van Lintant Salmond, en l'indous, etc.*, The Hague, 1942, pp. 183, 185, 624.

³ McLean, *op. cit.*, pp. 41, 107-8, 116; Rogers, *op. cit.*, I, p. 223, III, pp. 206, 359, 365.

⁴ McLean, *op. cit.*, p. 202; Thomas Tusser, *Five hundred pointes of good husbandry*, Oxford, 1934, p. 121.

pragmatism on any analysis of innovation in early modern England. While theory may help in prompting questions it is impossible for some of the most important to be answered'. In this study the data are too scattered and incomplete for a formal enquiry into the process of innovation and diffusion using the methods of geographers, sociologists, or economists to be worthwhile. Some attempt will, however, be made to answer the questions posed by the theories of innovation: the work of others who have studied agricultural innovations in the early modern period has shown what questions can be answered, what factors are likely to be of importance, and how far theory can be applied.⁶

The innovation with which much of this paper is concerned was the regular production of garden seeds as a cash crop by farmers and gardeners, using techniques brought from the Low Countries. Most producers were concentrated in a few areas particularly favourable to growing, which, in consequence, gained a reputation for garden seeds. As the introduction has explained, commercial seed growing was not new to England in the seventeenth century. This, however, does not mean that the expansion of production, concentration of output in a few areas, and regular growing of garden seeds by market gardeners was not an innovation for, 'an innovation [may] be intrinsically new or it [may] only be new to the setting in which we find it'. Similarly, an innovation may involve merely producing the same product in a different way. Thus the adoption of garden seed growing in the market garden areas discussed in some detail below was an innovation.⁷

Most garden seed growing was undertaken by market gardeners. It was a development from market gardening, itself an innovation: commercial gardeners adapted their production in response to a changing economic environment. Protestant refugees from the Low Countries were major innovators in market gardening, and were also responsible for innovations in English garden seed production. The Low Countries were growing garden seeds for export to England in the sixteenth century and the techniques for growing seeds were known to the Dutch immigrants. Arriving in England from the middle of the sixteenth century, they established communities, mostly in towns in southern and eastern England. Many were textile workers but vegetable gardeners and farmers also came, introducing the crops and intensive techniques of their native lands.⁸

Immigrant gardeners made a significant contribution to food production at Norwich, Sandwich, and Colchester before the end of the sixteenth century. At Norwich in 1575 the Strangers' production of vegetables was 'grete succor and sustenance for the pore'. The vicar of St Clements, Sandwich, took tithe of Dutchmen's gardens from 1570. Some Strangers moved from Sandwich to Colchester; by 1584 over 1000 Dutch people lived there and gardeners amongst them produced root vegetables for sale.⁹

The strong demand for cheap, filling, root vegetables from the ever-increasing population of London caused both the Sandwich and Colchester gardeners to export some of their produce to the capital, notably in the years of grain shortage in the 1590s. The profits to be made in London markets greatly stimulated gardening in the

⁶ Joan Thurst, 'New crops and their Diffusion: Tobacco-growing in Seventeenth-century England' in (eds) C. W. Chalkin and M. A. Havinden, *Rural change and urban growth, 1500-1800*, 1972; L. A. Brown, *Immigrant Diffusion, A New Perspective*, 1982, pp. 3-12; Mark Overton, 'The diffusion of agricultural innovation in early modern England: turnips and clover in Norfolk and Suffolk, 1580-1640', *Transactions of the Royal Society of Agriculture* 15, p. 206.

⁷ L. A. Brown, op. cit. p. 4.

⁸ *Ibid.*, pp. 1-2; A. M. Lambert, *The coming of the Dutch to the north*, 1985, p. 18; Smit, op. cit. in (ed) A. H. E. H., V, 11, pp. 261-266.

⁹ L. J. Baker, 'The Flemish and Dutch Communities in Colchester in the Sixteenth and Seventeenth Centuries', M. A. London, 1972, p. 34; *Star Papers Domestic, Elizabeth*, vol. 26, pp. 49, William boys, *Collection for the History of Sandwich*, Canterbury, 1792, p. 140.

London suburbs in the early seventeenth century, providing stiff competition for Sandwich and Colchester growers because they were further from the capital than the new gardeners of Fulham, Chelsea, or Bermondsey. This competition led the Sandwich and Colchester gardeners to turn to seed production, for which demand was growing and which, by reason of their skills and locations, they could exploit.¹²

II

The chronology of garden seed growing from the seventeenth century in the three main growing areas of England will be outlined before turning to a detailed consideration of the innovation. Specialization in garden seeds appeared first at Sandwich. Low Countries' gardeners who settled there from the middle of the sixteenth century developed local strains of beans, peas, radish, and carrot, some of which were sent to London as seeds along with other garden seeds. Just when the area began to send seeds to London is difficult to determine but production was under way early in the seventeenth century. The Sandwich Carrot was recognized for its excellence in 1610, and in the 1630s large quantities of peas and beans were grown there by the Dutch, possibly for seed. Some Dutchmen's probate inventories of that time list other vegetable seeds, although not in as large quantities as are found later in the century.¹³

Production is well documented after 1650. The Duke of Bedford's gardener purchased 'Sandish pease' in 1658; a leading London seed retailer advertised the seed of the Sandwich radish, pea, and bean in about 1677; and seedsmen's lists in the 1690s and 1720s included varieties of Sandwich seeds.

Very little evidence of shipments of vegetable seeds to London from Sandwich by sea has been found in the second half of the seventeenth century (apart from beans and peas, some of which may have been for seed), but by the third decade of the eighteenth century shipments were numerous and large. Between midsummer 1737 and 1738, 20 quarters of seeds were sent to London; 17 were sent in a similar period in 1740/41; and ten quarters in 1741/2. These shipments were described in the Port Books simply as 'seeds'. Canary seed, however, the only other type of seed frequently shipped, was clearly distinguished in the books, so the 'seeds' shipments must have been garden seeds.¹⁴

By 1749 Sandwich was the place whence, 'the Seedsmen in London are furnished with the greatest Quantities of their Seeds'; by 1792 'The seeds of vegetables, and other useful plants, which grew there in the highest perfection . . . were conveyed at an easy expense by the hoys to London, and from thence disseminated over the Kingdom.' In the 1790s seeds were the fourth most important export from Sandwich after corn, grain, and flour. In 1805 Sandwich grew radish and spinach seed and kidney beans for London seedsmen. At that time Sandwich seeds and vegetables supplied Canterbury and Dover markets but the high price of corn had caused 'only some part of the grounds formerly applied to the use of gardening [to] remain so at present'. J. C. Loudon mentions Sandwich as a seed growing area in the 1820s although he dwells more on Thanet production.¹⁵

No evidence of garden seed growing before the Civil War in the Colchester area

¹² PRO, L102 2669, L102 3919, Corporation of London, City Repertories, 11, 174 recto; Samuel Hartlib, *His Journal*, 1651, pp. 8-9; Thomas Fuller, *Worthies of Fynsham*, 1662, p. 71.

¹³ G. Scott-Thorson, *L.R. in a 16th Century*, 1621-1695, 1957, p. 24; William Felkingham, *Prodysseia*, 1610, p. 42; Kent A.O. PRO 1071, PRO 1072, U209, E 2.

¹⁴ G. Scott-Thorson, *op. cit.*, p. 24; J. Harvey, *Farm gardening in England, 1775*, pp. 26-27; Kent A.O. U209, E21; Stephen Swiner, *Country gentlemen's correspondence, 1712*, pp. 24, 28; PRO, L102072/5, E102072/10, E102072/12, E102072/17, E102072/18, E102072/19.

¹⁵ Thomas Ross, *A New Description of Gloucestershire, Hampshire, the Isle of Wight*, 16, 1749, p. 251; Bore, *op. cit.*, 1792, pp. 742-3, 758; John Bore, *General View of the Agriculture of the County of Kent*, 1793, pp. 105, 121; E. Hasted, *History and Topographical Survey of the County of Kent, Canterbury*, 1800, vol. X, p. 163; J. C. Loudon, *An Encyclopaedia of Gardening*, 1824, p. 2069.

has been found, despite garden vegetable production by the Dutch there in the sixteenth century. Annual totals of vegetable seeds shipped from Colchester (usually to London) from the 1660s indicate a sizeable trade and well established production:

1664: 43 cwt of carrot seed and 3³/₄ cwt of garden seeds

1676: 8 cwt of carrot seed, 4¹/₂ cwt of turnip seed and 121 cwt of garden seeds,

1700: 8 cwt of carrot seed.¹⁴

In the market gardening area between Chelmsford and Colchester, centred on Kelvedon, seed-growing grew substantially in the eighteenth century and continued to expand in the nineteenth century. In 1942 the area was still a major seed growing area with probably the most favourable growing conditions in Britain.¹⁵

The Vale of Evesham, an area of market gardening from at least the second half of the seventeenth century, sent seeds to other parts of the country through the port of Gloucester in the late seventeenth century. Six bags of seeds from Gloucester reached Bristol in 1679, 10 cwt in 1690 and a ton in January 1700. Several large consignments of seeds to Gloucester from Bristol in 1678 are puzzling; maybe these were seeds needed by the vegetable gardeners of the Vale which either could not be produced locally or were not as economic to produce as those grown for sale. By the third quarter of the eighteenth century the main markets for Evesham seeds were the Midland towns of Stafford, Lichfield, Leicester, and Nottingham. Onion seed was sent regularly to London in the early nineteenth century and carrot seed raised for the London market in the 1820s. Evesham, however ceased to be

a major seed-growing area in the nineteenth century.¹⁶

Some other market gardening areas, upon establishing a reputation for particular vegetables, went on to produce the seed of those vegetables for London seedsmen: eighteenth-century seedsmen sold Windsor peas and beans, Deptford onion seed, Battersea cabbage and asparagus seed, and London lock and radish seed. Likewise, individual gardeners and farmers outside the main producing areas produced garden seed for the market. One such was the Shrewsbury grower Richard Gardiner, who produced garden seeds in the 1590s and was a pioneer of commercial gardening in that town. In the 1660s kitchen gardeners near London produced cabbage seed for sale in the capital and in 1716 John Mortimer found farmers making good profits near London and other large towns growing carrots for seed. In the 1770s some London seedsmen were supplied with vegetable seeds by gentlemen's gardeners as well as by commercial producers.¹⁷

III

Commercial seed-growing is a complicated business. A prospective seed producer must recognize the exacting soil and climatic conditions favourable to seed-growing in general together with any special requirements of particular plant species and have a practical knowledge of plant breeding in order to prevent cross-fertilization. He must know and judge when to sow, transplant and harvest the crop, how to overwinter

¹⁴ PRO, Evesham 1590s, Evesham 1597-1600, Evesham 1601-1603. W. Pir, *General view of the Agriculture of Hertfordshire*, 1813, p. 115. R. W. Sidwell, 'A Short History of Commercial Horticulture in the Vale of Evesham', *Vote of Foreign Agricultural Society*, Report, Part II, 1866, p. 45. J. C. Loudon, *op. cit.*, p. 1073.

¹⁵ Ousey CRO.D.111.XXVII.2, London, *Encyclopaedia*, p. 1052. D. Lysons, *The Farmers of London*, IV, 1796, p. 376. Switzer, *op. cit.*, p. 21. Richard Gardiner, *Proposals*, introduced by *James Swaine and planting of London gardens*, 1599, n.p.; Richard Weston, *Treatise on Horticultural Economy and Gardening*, London, 1773, p. 4; B. Shatzkoff, *The History of the Production and Propagation of Vegetables*, Oxford, 1880, p. 33; John Mortimer, *Wales: An Agricultural History*, 1716, vol. I, p. 201.

¹⁴ *AFHEK*, V, 11, pp. 505-516. R. H. Burley, 'The Economic development of Essex in the later seventeenth and early eighteenth centuries', Ph.D. U. London, 1975, T. 25r-XXXI, p. 278.

¹⁵ *VCH, Essex*, vol. 11, pp. 470-80. J. S. Stamp, *Land Utilization Survey of Britain*, part 3a, Essex, 1942, p. 422, 440-1, *AFHEK*, V, 11, p. 215.

biennial species, and how to dry and store the seed to prevent deterioration.¹⁷

A detailed description of vegetable seed growing, particularly valuable because of its early date, is Richard Gardiner's 'Profitable Instructions' of 1599. The book was written by a philanthropic market gardener and textile merchant of Shrewsbury in an effort to encourage kitchen gardening and seed growing. In the passage quoted below Gardiner guides the reader through carrot seed production. Having selected the best carrots from the main crop in September and transplanted them, well spaced, to new beds:

Then have you nothing to doe with them untill about the last of April, at which time they will bee growne about a yard in height: then you have neede to take care of them, for the winde will easily breake them by the ground: then must you prepare some kinde of packe-threed, or linnen threed to set about them as a girdle, about two foote high from the earth as neede shall require by the growing of the branches: gird some higher then other some. Then shortly after you must have stakes in a readines, and as the Carrots must stand one against the other in the bed: so like wise the stakes must stand one against the other, to everie foure Carrots two stakes. The stakes must bee a yard and a half above the ground, and a sure helde within the earth for danger of winde: then must you prepare packe-threed or other threed to goe from stake to stake all the length of the bed, one course of lynes must be about two foote high, and another course of lynes must bee neere the top of the stakes, so that there must be two courses of lynes on the inner side of the stakes on both sides the bed. Then must you have crosse lynes, . . . as the Carrots branches doe grow they must be somewhat tended to keepe them in good order within the lynes: this being done about the last of August, the Carrot seedes will begin to bee ripe, and as they doe change to some browne colour, so to bee cut from time to time, untill the last bee sufficiently ripe about the first of October: then plare the Carrot seedes as you doe cut them on a Chamber floore to drie, & when they be drie, beare the seedes out with small staves, or beser with the edge of a lath, and cleane them from the composte or refuse (as you finde best by experience) with riddle and sive.

Gardiner favoured transplanting plants to be saved for seed, a method Sharrock

regarded as usual. He realized the value of selection, his carrots being chosen for shape, size, and colour. He was proud of his closed 'cabbage' lettuces, which had been perfected after several years of selection.¹⁸

The mystery of commercial seed growing could pass easily amongst the Dutch gardeners for they were in a close community, bound by nationality and religion as well as by the hostility of many English neighbours. Sandwich, at the end of a short sea crossing, was an entry point for many of the refugees who then joined other communities or formed new settlements. Gardening, and with it seed production, spread from Sandwich to Colchester by such a migration.¹⁹

Knowledge of new techniques, gardening and seed-growing included, was quickly gained from the Dutch by English husbandmen and gardeners. The suburban root producers of London learned their business in the early 1600s, probably from Dutch who moved to Surrey from Sandwich and began gardening there. Certainly the Dutch gardeners in Surrey caused great interest at the time. Gardeners were, in any case, in no position to be secretive for many worked in populous suburbs and, at certain times of the year employed men, women, and children as casual labourers.²⁰

Regular vegetable seed production for the market was not an activity recommended to gentlemen in books on husbandry until late in the eighteenth century. Richard Gardiner's 'Profitable Instructions' of 1599 was the only English book before 1773 to give detailed instructions on raising seed on a commercial scale. Most books on

¹⁷ Richard Gardiner, op. cit. 1599 'Richard Gardiner's Profitable Instructions 1599', (ed) Dr Calvert, *Early English Book & No. The Soc. Series II*, 4, 1922, pp. 114-2; Richard Weston, op. cit. pp. 1-11.

¹⁸ I. F. Becker, 'The Flemish and Dutch Community in Colchester in the Sixteenth and Seventeenth Centuries', *M.A. London*, vol. 14, 1915, p. 84; W. J. C. Moore, 'The Willaton Church of Norwich: its registers and history', *Anglo-N. Society of London*, . . . 1897-8 pp. 12-15, 22; *Days of old*, p. 741.

¹⁹ Samuel Harlib, *his Loggan*, 1651, pp. 2-9; Thomas Fuller, *Wimborne of English*, 1662, p. 33; A. H. E. W., *V. II*, p. 519; J. Norton, op. cit. p. 209; Corporation of London, *City Repository*, 11, F. 74, 1802; *Folkinghams*, 20-21, p. 42.

²⁰ H. A. T. George, *Vegetable Seed Production*, 1925, provides a good introduction to the complexity of seed-growing.

gardening, envisaged gentlemen (or their gardeners) saving their own seed each year and included instructions to that end, without going into the complexity of commercial production. Unlike the spread of clover-growing in Wales, or tobacco in Gloucestershire in the seventeenth century, gentlemen did not experiment with seed growing, or produce seeds for sale, and so played no part in diffusing the innovation in the seventeenth and early eighteenth centuries.²²

The most important agents of diffusion of commercial seed production were thus Dutch immigrants who brought their knowledge of gardening with them from the Low Countries. They in turn influenced English husbandmen to take up gardening and, in some cases, seed-growing. For the innovation, however, to become an established part of agricultural production soil and climate had to be favourable, as did social and institutional conditions, quite apart from the obvious dictates of demand, production costs, risks and profits.

IV

Favourable soil and weather are crucial to successful seed growing and largely determined where it was adopted in England. Good growing locations have relatively low average rainfall but sufficient to ensure full maturity of plants, together with a relatively dry and warm summer and autumn to facilitate ripening and harvesting and to help to prevent plant diseases. Light winds during the harvest increase the yield by minimizing seed shedding and also help to prevent cross-fertilization by wind-blown pollen. Mild winters preserve biennial crops which have to be overwintered in the soil. In addition to these general considerations, individual vegetables

require particular levels of temperature and sunlight to trigger flowering and seed setting.²³

Soils with a relatively high water-holding capacity but not overwet in winter are best for seeds: a medium loam is ideal. Uniformity of soil promotes a similar quality in seeds. The ground must be suitable for spade cultivation, planting and transplanting, particularly in winter. The soil should be of medium fertility; too rich a soil causes over-tall stems which bend and lodge.²⁴

The three major areas of English seed production measure up well to the exacting criteria of soil and weather for successful production. The heart of the Essex seed-growing area is a 'flat, fertile apron of uniform boulder clay which disintegrates . . . into a deep fine medium loam'. Essex is relatively dry, with temperatures moderated by the sea. It is today considered to be the best area of England for seed growing which is why seeds have remained of local importance for so long. The Vale of Evesham has 'liassic clay subsoils . . . lightened by alluvial gravel and sand, ideal for those who worked with the spade', level of surface and well-drained. The micro-climate of this part of Worcestershire is favourable to seed-growing 'its earliness, sunniness, and windlessness have been extolled by many writers'. Kent is also one of the driest and sunniest counties in England. William Boys summed up the soil and climate of Sandwich thus: 'the land being light, sandy, and fresh, is very good for producing most sorts of seeds, and the Ground being pretty low, the Seeds do not often receive a Blight, as in many other places.'²⁵

Successful innovation requires favourable social and institutional conditions; producers must be willing and able to take up a

²² Richard Weston, *op. cit.* p. 2-3; Joan Thirk, 'New crops and their Diffusion', *op. cit.*; Frank Entery, 'The mechanics of innovation: clover in Wales before 1750', *J. Hist. Geog.*, 2, 1, 1972, pp. 35-48; Richard Gardiner, *op. cit.*

²³ George, *op. cit.* pp. 32-3, 44.

²⁴ L.L.S. part 62, Essex, 1942, pp. 49-1; George, *op. cit.*

²⁵ L.L.S. part 72, Essex, 1942, p. 428; L.L.S. Part 68, Worcestershire, 1944, p. 42; A. H. C. W., V, 1, p. 107; Brad, *op. cit.* p. 41.

new crop and fit it into existing patterns of agriculture. At Colchester and Sandwich neither the Dutch gardeners nor their English imitators appear to have encountered any difficulty in renting land, no doubt their landlords were impressed by the high rents which garden land could command. In any case the Dutch were invited to settle in both towns. Kent, with its high proportion of freeholders and enclosed land, and a weak manorial structure, was a county well placed to adopt new crops with a minimum of institutional restraint.²⁶

Many of the Dutch arrived in households of ten or twelve persons and so were already organized in social units suited to small, intensively-worked farms and gardens. As a group linked by nationality and religion they would have been able to establish the close cooperation necessary for successful vegetable seed growing where, because of the dangers of cross-fertilization, it is vital to ensure that neighbouring farms do not grow crops of related species.²⁷

Dutch immigrants did not directly promote seed production or gardening in the Vale of Evesham. It has been suggested that the techniques of gardening there may have originated in the monasteries at Evesham and Pershore and that an influx of gentry who created private gardens after the Civil War also stimulated commercial gardening. The area was well fitted in terms of social organization, land tenure, and existing agriculture to adopt new crops. Joan Thirsk and J.M. Martin have shown how the area took to tobacco growing and market gardening.²⁸

The Dean and Chapter of Westminster held a good deal of land in the Vale let out on life-leaseholds which gave good security

of tenure to tenants and encouraged subletting. As a result, holdings tended to be small and scattered, tenants had freedom to farm as they wished, and poor gardeners could rent small plots of land. The tenant-right enjoyed by Evesham gardeners in the nineteenth century may have developed from this early security of tenure. Dr Martin found that gardeners in the Vale in the eighteenth century were usually poor; many owned or leased houses and gardens but had little in the way of movable goods. Many gardeners were part-timers, being also labourers, petty tradesmen or craftsmen. The 1861 census showed that gardening was a family trade: many offspring of gardeners remained, as adults, in their households and employed garden labourers were few. The opportunity for self-employment offered by gardening fostered rapid population growth in the area after 1750.²⁹

In Pershore and Ripple, both early gardening areas of the Vale, scattered hamlets had access to abundant commons and emphasis on animal husbandry on farms in the area provided a source of dung for the gardeners. In short, the Vale of Evesham contained all the preconditions for the adoption of market gardening by its poorer peasantry, and for gardeners to take advantage of a rising demand for garden seeds.³⁰

V

Profits to individual growers are difficult to determine. Accurate figures are not available and contemporary estimates rarely complete. Richard Gardiner published his retail prices for seeds in 1599 but we have no yields for seeds at that time. When mid-twentieth-century average yields are applied to his prices gross returns per acre are as follows: £56 for carrot seed; £186 13s 4d for cabbage seed; £26 5s per acre for turnip seed. Eighteenth-century evidence for yields

²⁶ A.H.E.P. IV, pp. 62-7; *Ibid.*, pp. 23-4.

²⁷ A.W. Ashby, 'Seed-growing in Essex', *J.R.S.L.*, 1912, 2, 130-1. D.L. Rieuwaut, *Nordic Accounts for Strayer Limited*, Norfolk Record Society, XXXIX, 1976, pp. 81-2; *Ibid.*, 9, 31, pp. 740-1.

²⁸ J.M. Martin, 'The Social and Economic Context of the Vale of Evesham Market Gardening Industry', *Ag. Hist. Rev.*, 50, 32, pt. 1, 1981, pp. 41-50; Thirsk, 'New crops and their Diffusion', *A.H.E.P.* V, 1, pp. 367-8.

²⁹ Martin, *op. cit.*, pp. 42, 45-6.

³⁰ Martin, *op. cit.*, pp. 46-7.

shows that they could equal or exceed those of the present century: John Mortimer in 1721 told of a man in Essex who had received £100 for 10 cwt of carrot seed harvested from one acre of old orchard dug up in order to grow seeds, a yield twice the modern average.¹¹

Mortimer found farmers near London selling carrot seed to seedsmen for between £5 and £12 per hundredweight: a gross return of from £25 to £60 per acre with modern average yields. The earliest complete estimates of the economics of seed growing are Richard Weston's of 1773. For an acre of lettuce seed he calculates costs and returns as follows:¹²

Digging	£2 15 0d
Seed	2s 0d
Hoeing	£1 21 0d
Transplanting	8s 0d
Rent, tythes, dung, top dressing and cleaning the seed	£4 7 0d
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Total	£8 0s 0d
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Yield, 1:3½ lb @ 6s per pound	£34 12 0d
Net profit	£26 12 0d
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<i>Weston's costs and returns for an acre of mangel for seed.</i>	
Digging	£2 10 0d
Planting	£1 0s 2d
Bulbs	£9 1s 6d
Hoeing and earthing	£1 0s 0d
Stakes, string and cleaning seed	£1 15s 0d
Rent, tythe and dung	£1 0s 0d
<hr/>	
Total	£17 16s 8d
<hr/>	
Yield, 758 lb @ 1s 6d per pound,	£56 14s 0d
Net profit	£38 17s 8d

As Mortimer and Weston were both writing of seed production with approval, their figures are optimistic. Weston's yield of 6¾ cwt per acre for onion seed is very high, double that averaged in England in the 1940s. Weston's figures ignore the overheads of an arable farm or market garden as a whole, such as rent for fallow

land or depreciation of draught animals and tools. On the other hand his costs presuppose seed-growing by gentlemen. Outgoings on a family farm or garden were lower as much less wage labour was employed. With all their imperfections, the estimates above do show that it was possible, at times, to make considerable profits from garden seeds. Joan Thirsk has shown that similar sums were possible from tobacco, a crop which, in its need of particular soil and climatic conditions, and large labour input, bears comparison with seed production. Market gardening, of which seed-growing was an extension, was also renowned in the seventeenth and eighteenth century for the high profits per acre which could be achieved by dint of much dung and labour.¹³

In comparison with the returns from seed growing, an average thirty-acre farm in the early seventeenth century is estimated to have made £14 10s net profit and a one hundred-acre arable farm in the first half of the eighteenth century might make £35 3s 8d a year profit on gross receipts of £302 3s 8d. Clearly both the intensity of seed production and the possible profits were far above the general run of farming, and seed-growing must have been attractive to family farmers and gardeners.¹⁴

Seed-growing, however, was a risky business. Yields in a growing area could vary greatly from year to year because of weather and incidence of plant disease. Even in the twentieth century average yields of garden seeds are given with caution because of annual variations. Gardeners might fall foul of birds and other pests which could destroy much of the crop. Cross-pollination might render the crop useless and fermentation in harvested seeds drying in large heaps could cause sterility. Risks were spread by devoting only a small part of the total acreage of the farm or garden each year

¹¹ Gardiner, *op cit*: 'The Production of seed of root crops and vegetables', *Imperial Agricultural Bureau*, (joint publication with: J. Aberystwyth, July 1943), p. 18.

¹² Weston, *op cit*, pp. 9, 11; Mortimer, *op cit*.

¹³ Weston, *op cit*; Mortimer, *op cit*; Thirsk, 'New crops and their Diffusion', pp. 84-5; *Imperial Agricultural Bureau*, *op cit*, p. 18; *AMEP*, V, II, p. 521.

¹⁴ Weston, *op cit*, *AMEP*, IV, p. 633; V, II, pp. 86-9.

to seed production. With some vegetables it was possible to grow the crop to maturity before deciding whether to harvest it for sale then or let it flower and run to seed.¹⁵

Fluctuations in yields made profits uncertain, the more so as prices received by producers could vary independently of yields. Mortimer's estimate of carrot seed prices of between £5 and £12 per cwt is an indication of the range of fluctuations commonly experienced. Weston sometimes sold onion seed to merchants at twice the price he used for his exercise in business economics, and he commented on the general variations in price he experienced. Profits were also unpredictable because many garden seeds will germinate after several years of storage. Thus prices to producers depended not only on the annual harvest and overall demand but also on stocks held by seed merchants. As seeds were easily imported, foreign harvest fluctuations added to price volatility at home.¹⁶

Some growers were nonetheless drawn to seed-growing by potentially good profits. Others tried seeds as a way of supplementing falling income during the long depression of grain prices. Garden seeds were one of the new crops at this time which enjoyed some success under such conditions.¹⁷

Large potential profits were a consequence of the demand created by the steady increase in all sorts of gardening in England. The scale and sophistication of formal gardens created for the gentry and aristocracy developed from the intimate, intricate, Tudor gardens to the vast landscaped parks of the eighteenth century, when, for a time, English garden design was considered *à la mode* by all Europe. At the same time more and more households had gardens, so that in the 1660s John Worlidge found 'scarce a

cottage in most of the southern parts of England, but hath its proportionate garden, so great a delight do most men take in it'. The great expansion of market gardening for fruit, vegetables and flowers, and of nursery gardening for trees, flower roots and shrubs further contributed to the demand for garden seeds.¹⁸

Flower seeds, of which little evidence of commercial production has been found, were nevertheless demanded by the creators of pleasure gardens and sold by seedsmen whose lists of wares contained ever more varieties. No doubt many such seeds were still saved by gardeners for their own use or to give away. Some well-to-do Dutch immigrants in the early seventeenth century swapped plants and flower seeds with other gentlemen gardeners. Gentlemen and others who grew and bred flowers for pleasure formed florists' societies in the seventeenth and eighteenth centuries where seeds could be exchanged. Many flower seeds and roots were imported from the Low Countries and elsewhere throughout the period. Some gentlemen's gardeners and nurserymen raised flower seeds for sale, the nurserymen tending to specialize in particular varieties.¹⁹

VI

Probate inventories of some seventeenth and early eighteenth century Dutch farmers and gardeners at Sandwich have survived: too few to support statistical analysis, these records nevertheless give an impression of the agriculture of the Dutch at Sandwich, including seed growing. The inventories

¹⁵ George, *op cit.* pp 24-5; imperial Agricultural Bureau, *op cit.* Stephen Switzer, *An account of seeds*, 1731, pp 48-52; A. W. Ashby, 'Seed growing in Essex', *J. R. A. S. E.*, 1913, 7: 370-1, 377; George, *op cit.*, p. 24; Brad, *op cit.*, p. 411.

¹⁶ Gardner, *op cit.* (Imitate McCormick), *The Agricultural Notebook*, 1653, p. 186; A. Weston, *op cit.* pp 6-11; Mortimer, *op cit.*

¹⁷ *J. H. E. W.*, V, II, pp 533-564.

¹⁸ Mrs. Hadfield, *A History of Broad Gleaning*, 1895, chaps 2-5; John Worlidge, *Seeds and Herbs Cultivate*, 1677, p. 175; *J. H. E. W.*, V, II, pp 505-512.

¹⁹ B. Townsend, *The Garden Seedsmen*, 1726, pp 38-42; *Evening Post*, no 1052, Feb 20-22, 1722; Ruth Duthie, *Flower Flowers and Seemings*, 1983, pp 17-22; Ruth Duthie, 'Introduction of plants to Britain in the 16th and 17th centuries by strangers and refugees', *Proc. the Highland Soc.*, XXIV, 3, 1983, pp 406, 409-10; Richard Bradley, *A General Treatise of Husbandry and Gardning*, 1726, vol I, p. 247-99.

were cheap to import. Almost all English seed merchants in the period traded from London, and so could choose seeds shipped round the coast from English growers or those from abroad. William Harrison wrote in the 1570s that during his lifetime people used to 'make their provision yearlie for strange new seeds out of strange countries from whence they have them abundantlie'.⁴⁵

Statistics of garden seed imports confirm Harrison's remarks. Onion seed was frequently imported: a hundredweight was landed at Hull in September 1541 and £770 worth passed through the Port of London at customary values in 1565. Between October 1599 and the following September the London port books recorded imports of seeds and drugs valued at £594 15s 4d. Surviving port books for London between then and 1640 all record annual imports of seeds at values of up to £2180, with average annual values of between £300 and £500. Houghton recorded total imports of 6138 lb of garden seed between 29 October 1682 and 1st February 1683. In 1773 seedsmen were still 'obliged to import large quantities from Flanders'.⁴⁶

The Low Countries were a frequent source of garden seeds. In 1568 the Cork of Bruges carried a barrel of 'all manner of seeds' to London and in the same year the *Samson* of Bruges brought 50 lb of garden seeds. A search for strangers in 1546 revealed two Flemings in St Katherine's Ward in London: the father and son had lodged there for three weeks 'carrying sale of garden seeds and other things'.⁴⁷

Garden seeds came, however, from many countries throughout the period; in 1564 onion seed was imported from the Netherlands, Germany, France, and Spain. In a short introduction to a pamphlet published in 1712 a seedsman mentioned garden seed imports from Italy, Turkey, Egypt, France, Portugal, Holland and Brazil. Contemporary seedsmen's lists display the diverse origin of garden seeds. A printed list of the 1670s advertised Strasburgh, Spanish and French onion seed, French leek seed, and among the salads, Spanish radish, Roman, Arabian, and Savoy lettuce, Dutch and Russian cabbage, and French choux, melon, and sorrel. Sometimes, no doubt, these names described types of vegetable rather than the origin of the seeds but in many cases they indicate the country of origin.⁴⁸

Some foreigners established well-organized seed gathering businesses. Wild broccoli seed was gathered each year around Naples for export. Cauliflower seed was re-exported by Italian merchants in the late seventeenth century having come from 'Candia and other Levantine parts'. English residents abroad looked for new varieties of vegetables to recommend both to friends and seedsmen and the Crown and nobility sent gardeners on plant and seed gathering expeditions to foreign parts.⁴⁹

Some seed was imported because it was consistently of better quality than that grown in England. Spanish onion seed and Eastland flax seed were far better than seed saved in England. In the 1720s 'The French Spawn is in great Request amongst Mushroom Raisers' and Cos lettuce seed was 'also called the Brasil, Versailles, etc., on account of some extraordinary good Seed, which has some Years been brought from thence'. A correspondent in The Hague in 1749 told

⁴⁵ William Harrison, *The Description of England*, edd. Georges Edde, (New York, 1978), p. 262; Brian Diaz (ed.), *The Port and Trade of London*, *Discovers* (London, 1962), vol. 1, pp. 61–62; Harvey, *Early Navigation*, p. 51; T. Donally, 'Archer Clephane, £50000 Merchant and Seaman', *As the Sun*, XVIII, 2, 1920, p. 130; Switzer, pp. 10, p. 21.

⁴⁶ *BC*, *Early Hist.* 8, 69–73; PRO, E150/11/182; A. M. Milard, 'The Import Trade of London, 1500–1640', PhD, Univ. London, 1950, vol. 1; John Houghton, *A Century of the Importation of Foodstuffs into This*, edd. B. Brody, 1927, p. 160; Richard Weston, *op. cit.*, p. 5.

⁴⁷ Brian Diaz (ed.), *Port and Trade of London*, pp. 61, 78; Harvey, *Early Navigation*, p. 51.

⁴⁸ PRO, SP, 1215/13; Switzer, *Country gentleman's companion*, pp. 1–2; Harvey, *Early Gardening Catalogue*, pp. 66–7.

⁴⁹ Switzer, *Country gentleman's companion*, pp. 1–2; Nicholas de Bunsford, *The French Gardener*, trans. J. Evelyn, 1657, pp. 166–7; *Fas: Sussex RD*, 11F 15/23; Harvey, *Early Navigation*, pp. 28, 51; J. Harvey, *Ne Country Gentleman: Thomas Knollyn, 1661–1728*, 1987, pp. 38–9; Adfield, *History of British Gardening*, pp. 79–81.

a Hertfordshire gentleman, 'A lover of gardening here tells me that the best method with the cantaloupes is to get the seeds from Spain every year because using those that grow in a colder climate takes a good deal of goodness out of the fruit.'¹⁰

The precise long term effects of imports on domestic production can only be surmised. Commercial production of garden seeds in the Low Countries was well established in the early sixteenth century and imports may then have accounted for a large proportion of total supply. They were certainly an important reason for the concentration of seed merchants in London, the main port of entry for foreign seeds. The appearance of growers in Kent and Surrey may, by providing new domestic sources of supply, have eaten into the market hitherto enjoyed by imports.

VIII

Seed-growing was adopted in favourable areas in the seventeenth and early eighteenth centuries without the agents of diffusion common to some of the other 'new crops' of the period. It was not a gentry-led innovation, stimulated by landowners encouragement to their tenants or by the demonstrations and experiments of gentlemen. Neither was it spread by books, pamphlets or correspondence. Instead, the initial innovators were Dutch immigrants. Thereafter the diffusion must have been by word of mouth and personal observation, helped by the receptiveness of the majority of the potential adopters – market gardeners. Gardeners were practical and enquiring people. They ran high cost businesses, subject to changes in taste and eating habits, and so were used to trying new crops and new production techniques. One writer, recognizing the skill of farmer-gardeners near London, advised 'country farmers, to

send their sons they design to breed in their own way' to them, 'or at least take some servants that have been thus bred'. Small wonder, then, that seed-growing as a commercial venture was absorbed by the horticultural community.¹¹

The major part played by Dutch immigrants in the development of garden seed growing is yet another example of the way in which they brought the agriculture of the Low Countries to England in the period. Immigrants from the Low Countries introduced, or revitalized, commercial gardening in many parts of England from the mid-sixteenth century onwards. They pioneered the bulk production of roots as cheap food for the poor, first around Norwich and other East Anglian towns and then, at the turn of the sixteenth and seventeenth centuries, around London. Outside gardening, the Dutch demonstrated to farmers in East Anglia the potential of roots as animal fodder, and they may, by spreading gardening, have indirectly shown farmers in the seventeenth century the advantages of careful soil preparation.¹²

Once established as a regional speciality, garden seed production had a tenacity greater than most of the new crops tried in the seventeenth century: seed-growing remaining important in Essex and Kent into the present century. The favourable climate and soils in these areas, together with good profits, were no doubt most responsible for this longevity. With a similar combination of ideal conditions and profitability another regional speciality, liquorice, was cultivated for centuries at Pontefract.¹³

The size of net profit per acre from seed-growing was such that, although in most cases forming only a small part of total

¹⁰ *ADP*, V, 1, pp. 32-2.

¹¹ Overton, *op. cit.* pp. 206-20. Paul Glennie, 'Continuity and Change in Horticultural Agriculture, 1550-1750. I. Trends in crop yields and their determinants', *Agr. Hist. Rev.*, 26, 1978, p. 11, pp. 149-52, 152; *ADP*, V, 1, p. 265.

¹² W. J. B. Paterson, 1609, *East Angles*, III, 1925, pp. 247-9; *VCH Essex*, II, pp. 476-82; *ES*, part 12, Essex, 1942, pp. 429, 440-1; *ADP*, V II, pp. 493, 523-4.

¹³ *Switzer, County gentlemen's magazines*, pp. 14-22; *Herts. DC*, 67419.

output, it made a significant contribution to total income. When produced alongside fresh garden crops and other intensive crops such as flax, madder, liquorice, or teasels, seeds contributed to the high incomes from small farms and gardens marvelled at by some seventeenth-century writers and borne out by the prosperity of the Dutch growers at Sandwich.³⁴

High profits were subject to a consumer demand not, in the main, dominated by

necessity but by taste and fashion: many retail customers were gentlemen or others lower on the social scale who nonetheless had money to spend on non-essential goods. In the increasingly hectic retail markets of the late seventeenth and eighteenth centuries, many consumer goods and luxury foods competed with garden seeds both for the spare pounds of the gentry, and the few shillings a year available to the more modest inhabitants of London and provincial towns. The wholesale and retail trade in garden seeds will be discussed in the second part of this essay.

³⁴ *THESE*, V, II, pp. 312, 321, 342-4. A collection produced in excess of from Sandwich, the total value of movable goods at the 1722 census was £100, and in 1762, over £200.

Notes and Comments

ANNUAL GENERAL MEETING, 1989

The 38th Annual General Meeting of the Society will be held at 9.30 on Tuesday 3 April 1989 at Trinity and All Saints' College, Horsforth, Leeds. Nomination forms for officers and members of the Executive Committee should be returned to the Secretary no later than Wednesday 23 March 1989.

CONFERENCE ON THE HISTORY OF AGRICULTURAL SCIENCE AND EDUCATION

A one-day Conference on the above theme jointly organized by the British Society for the History of Science and the Institute of Biology History Group will be held at Rodmasted Experimental Station, Harpenden, on Saturday 12 May 1989. Further details and a booking form are available from Dr Keith Vernon, Centre for the History of Science, Technology and Medicine, Department of Science and Technology Policy, The University, Manchester, M13 9PL.

HISTORICAL DATA ARCHIVE PROJECT

This project aims to investigate the existing stock of machine-readable historical data files with the intention of producing a bibliographic guide for the use of the research community. All those with such data are requested to contact the project co-ordinator, Sheila Anderson, Cambridge Group for the History of Population, 27 Trumpington Street, Cambridge CB2 1QA, Telephone 0223-33194. E-Mail SJA23@UK.AC.CAM.PHX.

INDEX TO THE REVIEW

Members of the Society will receive with the next issue, at no additional charge, a copy of the consolidated index to the *Agricultural History Review*, volumes 1-35, 1953-1987 inclusive, which has been prepared for the Society by Ms Lorra Smith. This volume consists of 76pp. and is printed and published in the same format and cover as the *Review* itself. Additional copies are available from the Treasurer of the Society, and on sale more widely at the price of £12, including postage and packaging. Members may wish to draw to the attention of others the existence of this valuable research aid, and ensure that institutions and libraries taking the *Review* by direct purchase also buy this index volume.

RURAL HISTORY DATABASE

The Institute of Agricultural History at the University of Reading has recently embarked upon a major new project: the establishment of the Rural History Database. This involves the transfer onto computer of more than 30,000 references to articles, books, and theses on British and Irish rural history, which will become accessible via the Joint Academic Network (JANET). It will include the bibliographic lists, which have been a regular feature of the *Review*, as well as the mass of additional bibliographic information which has been collected by the Institute during the past two decades. Testing the system is currently under way. Information about the Rural History Database can be obtained from Dr Raine Morgan, Institute of Agricultural History, University of Reading, PO Box 229, Reading, RG6 2AG.