Land Enclosure in the Early 19th Century
The Parish of Alvingham; a Case Study

Alvingham enclosure 1819-1822

An analysis of trends post-enclosure to the present day (2023)

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Enclosure

'Enclosure was the replacement of 2 or 3 large open fields round a village, whose strips were owned individually but whose crops and stock were controlled by the community of owners… by smaller, individually owned fields whose cropping and stocking could be controlled by the owner. Such a change affected the whole structure of society.' – J.H. Plumb[1]

'Overall, between 1604 and 1914 over 5,200 enclosure Bills were enacted by Parliament which related to just over a fifth of the total area of England, amounting to some 6.8 million acres.'- UK Parliament[2]

Preface

A detailed analysis of the enclosure of Alvingham is related within this text with particular reference to factors affecting its conception and implementation up to 1850. From1850 to the present day, there are so many factors involved in the eventual outcome that, to keep the text brief, only the most salient points in the opinion of the author are discussed.

[1] JH Plumb, "England in the Eighteenth Century" (1714 – 1815)

[2] UK Parliament, Enclosing the Land (2023). https://www.parliament.uk/about/living-heritage/transformingsociety/towncountry/landscape/overview/enclosingland

THE MAKING OF MODERN ALVINGHAM.

The Enclosure of the parish by Act of Parliament: 1819 - 1822.

Notes by Eleanor and Rex C. Russell.

1. ALVINGHAM BEFORE ENCLOSURE IN 1819.

At this date the parish comprised 1753 acres, (the 1961 Census gives the acreage as 1794). Of this total area only 438 acres were then 'enclosed', i.e. hedged and fenced. These 'old enclosures' lay mainly in a belt east of the Yarburgh to Cockerington Road, and south of the Louth Navigation. Roads and Drains contained 13 acres, and the remaining 1302 acres were still 'open' - still not enclosed and divided into hedged fields.

These 1302 open acres were divided between lands mainly arable -- the East Field, 521 acres, and the West Field, 548 acres -- and areas mainly of meadow and common pasture -- the Great Fen, 139 acres (east of the Louth Navigation), the Little Fen, 75 acres (west of the Navigation), and Langdales, 18 acres (abutting on Conisholme and N.Cockerington).

In the autumn of 1818 agreement was reached amongst the main proprietors of lands in the parish to petition Parliament for an Act to enclose the parish. This Act was passed in 1819.

2. WHAT DOES 'ENCLOSURE' MEAN ?

" Enclosure was the replacement of 2 or 3 large open fields round a village, whose strips were owned individually but whose crops and stock were controlled by the community of owners, (according to ancient rights and practices), by smaller, individually owned fields whose cropping and stocking could be controlled by the owner. SUCH A CHANGE AFFECTED THE WHOLE STRUCTURE OF RURAL SOCIETY." (J.H.Plumb).

3. THE ALVINGHAM ENCLOSURE ACT.

(There is a copy of this Act in Grimsby Public Library). This Act -- "An Act for Inclosing Lands in the Parish of Alvingham ..." -- received the Royal Assent on 12th July 1819. It runs to 34 printed foolscap pages, and contains detailed instructions for the enclosure of the parish. Land was to be given to the Bishop of Lincoln and his lessee, John Maddison, Esq., in lieu of all future Tithes. New Roads and Drains were to be laid out and made. The officials appointed by the Act to effect this transformation -- the Enclosure Commissioners were :-

JOHN BURCHAM of Coningsby
JOSEPH TRUSLOVE of Cambridge
PHILIP SKIPWORTH of South Kelsey

They were to receive £2. 12s. 6d. a day for their work. Their SURVEYOR was JAMES BRADLEY of Boston.

The work of enclosure began on 2nd October 1819, and was completed by 29th June, 1822. In these three years the face of the parish was transformed, the modern farming system began, and a new way of life for the parishioners started.

4. THE RESULTS OF ALVINGHAM ENCLOSURE.

The courses of the 3 main public roads were unaltered; two new private carriage roads - the East Field and the Great Fen occupation roads - were made. Five new public Drains were constructed.

Land was awarded to two special allottees and 29 other owners, as follows:-

	Acres	Roods	Perches
i Special Allotments			
The Surveyors of the Highways for road repair material	0	2	0
The Bishop of Lincoln, and his Lessee, John Maddison Esq., in lieu of Tithes	392	0	7
ii General Allotments			
1. John Maddison, Esq.	514	0	29
2. Sir William Earle Welby, Bart.	77	2	5
3. Peter Hand	74	1	13
4. William Scrope, Esq.	51	3	26
5. Elizabeth Barkworth	33	3	2
6. Isle Grant	32	2	9
7. Reverend John Parkinson	24	0	11
8. William Waters	12	2	12
9. Thomas and John Parker	12	2	11
10. Reverend William Chaplin	10	3	28
11. Robert Cook	10	1	14
12. Cornelius Parker	9	2	33
13. Reverend George Grantham	7	0	16
14. William Wooer	6	2	19
15. Reverend George Oliver	6	2	6
16. Reverend William Wilkinson	6	1	37
17. William Rose	6	0	35
18. The Churchwardens of Alvingham	5	1	32
19. John Leach	4	2	27
20. Andrew Dunham	3	1	23
21. Robert Lucas	3	1	19
22. William and Edward Parker	3	0	6
23. Thomas Young	2	0	39
24. Joseph Wilson	1	2	38
25. Waldo Coningsby Sibthorpe, Esq.	1	2	31
26. Reverend John Waite	1	2	27

	Acres	Roods	Perches
27. John Baldock	1	1	28
28. Nicholas Edmund Yarburgh	1	1	27
29. Robert Robinson	1	0	31

The Alvingham Enclosure Award, which is the permanent legal record of the enclosure, is a leather bound document in book form, 16½" x 21", containing 39 skins of parchment and the fine Surveyor's map of 1822, 33" x 39".

There is no mention in the Award of the total costs of the enclosure, but the Commissioners do state that costs were reckoned on the basis of £5 per acre. "... the expenses of ... passing the ... Act of executing the powers therein contained and of fencing the Allotments ... reckoning the sum of five pounds and no more for each and every acre of the Allotments so set out by us ... "

The total cost of the enclosure of the 1302 open acres within the parish would be, on this reckoning, £6,510. This would be met by the 29 general proprietors and the share of costs borne by each owner would be in relation to the value of the land he was awarded.

2. General Analysis of Enclosure

2.1 The Need for Enclosure

Prior to the middle of the 18th Century, many disadvantages were faced by numerous progressive farmers primarily due to the prevalent system of open-field farming. The drawbacks to this system, as was gradually realised during the 17th and 18th centuries, far outnumbered the advantages, constraining as they did, the evolution of a better type of agriculture.

The open-field system consisted of a number of owners of land (for example, squires, tenants and copyholders) all of whom held a small or large number of strips scattered over the manor, as a result of which they had to spend time travelling from one allotment to another. As all these owners had to work together as a team, rigid rules of procedure had to be observed; thus, a proprietor could make no change to the time-honoured rules of farming unless he carried his fellows with him.[3] So, when the idea of farming for a profit arose, many of the farmers who thought they saw ways of making larger profits found themselves constrained by the ancient rules of community farming. There were some very good arguments in favour of enclosure, but as many supporters of enclosure found out, all old habits (systems) die hard.

Under the open-field system, each proprietor had the right to pasture his cow(s) and sheep on the common land.[4] Consequently, the commons were grazed by a variety of animals whose breeding could not be controlled, thus producing a selection of cross-breeds of all shapes and sizes; as a result, improvement of livestock was almost impossible.[5]

The village proprietors set aside part of their harvest to serve as seed. Their corn was

[3] EW Bovill, English Country Life, 1780-1830, page 3
[4] EW Bovill, English Country Life, 1780-1830, page 2
[5] Peter Mathias, The First Industrial Nation, page 78

a mixture of strains which were used recurrently, and not improved by selection.[6] The absence of hedges in the open fields exposed the crops to winds. Corn was blown down and crops on adjacent strips sometimes became inextricably mixed. These scattered strips made an adequate system of drainage very difficult, and the high cost of laying drainage systems served as a sufficient deterrent to any action to remedy the situation.

The innumerable strips caused many disputes[7] and a large amount of land was wasted in the paths which were necessary to give each proprietor access to his strip. As there were only a few fences around the grass common and the corn, shepherds were required to look after the animals[8] and prevent them from straying and eating the crops. The herds had to be brought in earlier in the winter than on enclosed (and, hence, sheltered) land and the sheep had to lamb later in the spring. This meant that the lambs were on the meadow for a month less before the grass was left to be cut for hay, and similar difficulties occurred in rearing calves. The strips were too narrow for ploughing and harrowing except along their length,[9] so twitch or climbing weed covered the turf ridges between the strips and docks and thistles flourished in the fallow.

As all the animals were herded together, diseases spread through them without check. The losses from sheep-rot and cattle-plague were devastating.[10] Meat from animals that had died was often the only meat received by the poor. The lack of stored fodder caused most of the animals to be half-starved during winter. Every one of these 'ailments' of the old system, it was gradually realised, could be remedied by enclosure.

Another benefit of enclosure, in theory, was that the farmer, instead of having to travel probably miles to a strip, would just have one or two consolidated blocks of land to

[6] P Mantoux, The Industrial Revolution in the 18th Century, page 168
[7] P Mantoux, The Industrial Revolution in the 18th Century, page 169
[8] EW Bovill, English Country Life, 1780-1830, page 15
[9] P Mantoux, The Industrial Revolution in the 18th Century, page 148
[10] See, for example, Rex C Russell, The Enclosures of Market Rasen and Wrawby cum Brigg, page 4

which he must go. (This was thought to be one of the main assets of enclosure, i.e. consolidation, but as explained in section 4.2, this was rarely true). This would save time and energy. The commons were divided during enclosure, and henceforth, each proprietor had to keep his animals on his own allotment, thus enabling controlled breeding to improve the stock, also reducing the spread of diseases among them. Shepherds, generally, (once the hedges had matured) were no longer required to prevent animals from straying.

Enclosure also enabled the more intellectual proprietors to improve their seed by selection, their choice of produce now being in their own hands. The new consolidated fields would be hedged or fenced round, evading winds which previously flattened and mixed varieties of corn over the open fields. Drainage was now possible and could be successfully adopted as the only person involved would be the proprietor of the land himself (therefore avoiding quarrelling and indecisions). Furthermore, land which had been wasted in between strips for pathways was gained due to the consolidation.

Enclosure thus engendered a new field layout through the extension of arable land over some areas previously kept for common grazing (if the new drainage made this possible) and (usually) a new road system within each Parish, hence radically altering the appearance of the area; as well as the nature of farming itself.

2.2 The Implementation of Enclosure

Parish after parish in the county of Lindsey was transformed in the period between 1760 and 1830. As enclosure in many parishes abolished the old working systems of open-field farming, the face of the parishes took on a new appearance with scores of miles of new roads. Drains and hedges had first been planned on surveyors' drawing boards before their courses were staked out over the land itself; planned in this way, the new roads within each parish tended to be straight, running between parallel hedges. The new hedges were straight and enclosed rectangular fields. There is a visible contrast between these newly-created roads

and fields and the much older winding lanes and irregularly-shaped fields at the village centre. The use of some lanes and roads ceased at enclosure, their surfaces being added to the newly-created rectangular fields. The very word for designating pieces of land began to change. Previously, the large open arable and grass lands were known as 'fields', whereas the new, enclosed hedged areas were called 'closes'.

2.3 How the Decision to Enclose Was Made

The decision to enclose a parish was made by the owners or holders of land within the parish. This fact explains why some parishes were enclosed as early as the 1100s and others not until the early 1900s. Where local proprietors were content with the income they were receiving from an open-field parish, they would be in no hurry to spend money on enclosure.[11] If difficulty arose to reach an agreement, then enclosure would be delayed. Personal choice as well as economic considerations could hasten or delay enclosure;[12] as was, for example, the case during the application for the Alvingham Enclosure Act.

It was necessary for the owners of at least four-fifths of the land in a parish to reach agreement to enclose. If, for example, five owners who together owned four-fifths of the land of a parish were agreed upon enclosure, they could, legally, coerce as many as twenty smaller proprietors, perhaps reluctant to incur the expense of enclosure, into enclosing the parish. The Enclosure Act was hence the instrument of coercion. In Alvingham (as in many other parishes before and at this time), it was decided by at least four-fifths of landowners that there was a need for enclosure and so they submitted an application for an Act of Enclosure.

[11] See the case of Scrope concerning Alvingham Enclosure in chapter 3.1 – The Initiation and Implementation of the Alvingham Enclosure Act
[12] JH Plumb, England in the 18th Century, 1714-1815, page 17

3. Enclosure of the Parish of Alvingham

3.1 The Initiation and Implementation of the Alvingham Enclosure Act

The first intimation that an attempt to enclose Alvingham was to be made was an advertisement which appeared in the Rutland Stamford Mercury, the leading Lincolnshire newspaper at the time. A meeting was held at Louth, on 8th March, 1806 (see appendix 1). This meeting failed to find a reasonable compromise and so for the time being, the thought of enclosure was dismissed. One hypothesis for this is that the Napoleonic Wars (1803-1815) stimulated grain production and prices for grain boomed so perhaps farmers in the parish were satisfied with their income from the open-field system and were therefore unwilling to incur the expense of enclosure.

However, after the Napoleonic Wars, the drastic fall in grain prices proved disastrous to many farmers; therefore, by the 11th September, 1818, when a second attempt was introduced to enclose the parish, the farmers were more open to enclosure, perhaps by then convinced of the benefits and hence greater profitability enclosure would bring.

On 13th November, 1818, agreement regarding the proposed enclosure of Alvingham was reached by at least four-fifths of the landowners in the parish (as required by law). The Alvingham Enclosure Bill finally became an Act of Parliament on 12th July, 1819, and its passage through the House of Commons and House of Lords was typical of Enclosure Acts passed during the years of enclosure. The Bill very nearly failed as a result of landowner William Scrope's absence abroad. Furthermore, one landowner refused to sign the Bill, showing (as was the case in many parishes) that not all landowners were in favour of enclosure. His refusal was significant as he owned 43 acres and therefore could have posed a threat to the four-fifths majority. This was somewhat unusual as it was more commonly the smaller proprietors who were uncooperative for they were in danger of being squeezed out by

larger landowners and also of not being able to meet their relative expenses towards enclosure.

Three Enclosure Commissioners were appointed and granted a salary of £2-12s-6d (£2.65) a day. The commissioners evaluated all the proprietors' claims and then drew up their plan to reshape existing roads, fields, drains and so forth. Once the plans were completed, the commissioners were legally bound to give proprietors the opportunity to complain. Hence, in the Rutland and Stamford Mercury (p.2, column 4), on the 22nd September 1819, the following notice was printed:

"Any persons aggrieved by the settling out of these new roads are invited to a meeting at which complaints can be registered and a compromise agreed."

The plans were agreed upon, the works commenced on 2nd October, 1819, and the commissioners concluded their work on 29th June, 1822.

In 1822, the commissioners drew up the Enclosure Award (see appendix 2). This document summarises the results of enclosure and the commissioners' accounts reveal the cost of the transformation. There is, in fact, no mention in the Award of the total costs of enclosure but the commissioners do state that the costs were reckoned on the basis of £5/acre. The total cost of enclosure of the 1302 open acres within the parish would be, on this reckoning, £6,510.00. This cost would be met by the twenty-nine general proprietors and the share of costs borne by each owner would be in relation to the value of the land he was awarded. As this money was only for hedging or fencing the land allotted, further payment would be required for the building of bridges, ditches and roads. Hence, it is clear that enclosure could be an expensive transformation.

4. The Consequences of Enclosure Nationally and in Alvingham

4.1 Disadvantages

Small proprietors, after enclosure, often ended up with the least productive land because there was little they could do against the commissioners' wishes. As stated earlier, a majority of four-fifths of the owners of the land in the parish had to agree to activate enclosure and very often, these small proprietors were in the minority group of one-fifth who were opposed, with the smallest areas of land and least able to afford the expense enclosure incurred.

Large farms established during enclosure provoked a rise in the rents, creating greater financial strain for farm tenants.[13] There was a reduction in demand for agricultural labour which caused the depopulation of villages, peasants being forced to seek employment in towns and cities.[14] Enclosure Acts facilitated the acquisition of the holdings and stock of small farmers at knock-down prices. While this created opportunity for large landowners, enabling them to increase his/her acreage, this meant that the smallest of landowners were squeezed out. Indeed, it has been argued that enclosure was the start of capitalism.[15]

Since the commons had been divided up and allotted, the small proprietors had lost their grazing right and if only a small area had been allotted to them (not allowing enough to leave for grazing), then they would have to sell their cow(s) and sheep, probably leading to bankruptcy. With the demise of the commons' shepherd, who had previously tended to everyone's animals, the proprietor would have to look after his animals himself until the hedges erected at enclosure were of substantial strength. However, being occupied by all the

[13] EW Bovill, English Country Life, 1780-1830, page 5.
[14] P Mathias, The First Industrial Nation, page 62. "Enclosure, creating a new 'mixed farming', particularly root crops like turnips, required more labour. All this meant a need for a greater labour force on the land to cope with the great rise in agricultural production. Numbers in agriculture only declined relative to numbers employed in other industries which were expanding more rapidly than agriculture after 1750".
[15] Patrick Brantlinger, Barbed Wire: Capitalism and the Enclosure of the Commons, page 9-11 and Jason Hickel, The Divide: Global Inequality from Conquest to Free Markets, page 76-82

other tasks on the farm that required his attention, the proprietor would have to employ a private shepherd. With the cost of enclosure being so high, this he could often ill afford to do, resulting with him having to sell the animals and his ultimate demise as a smallholder.[16]

One of the principal aims of enclosure was to consolidate the land within the parish. It was believed by many historians that by consolidating the land, it reduced long journeys experienced by landowners between allotments. However, in the parish of Alvingham, arable and pasture land was still in two distinct areas and for this reason, land holdings were still separate. The majority of meadow pasture was to be found in the Little Fen, the Great Fen and Langdales, which are indicated on the map of Alvingham of 1850 (see appendix 5). The reason for this was the soil type. All this land is of Newchurch soil type which, at the time, was a difficult soil for anything other than growing grass. The majority of the arable land was still to be found in the East Field and West Field and, as the soil type is Holderness, is much more suited to arable crops. This land had to be divided equally and justly, allowing each proprietor a certain amount of both arable and meadow pasture. So, if a small proprietor only had two allotments, one arable and one pasture, then the distance between these two would probably have been as great as that before enclosure. Thus, in this respect and with the circumstances of variable soil type, not unique to Alvingham, enclosure in many parishes failed to avoid lengthy distances between land lots.[17] Therefore, the purported advantage of enclosure engendering less travelling time between a farmer's land does not always stand.

Last but not least was the potential for social unrest, instigated by small landowners/copyholders who felt aggrieved by the results of enclosure and peasants' loss of rights to common land and woodland. Whilst this situation did not result in social unrest in

[16] P Mantoux, The Industrial Revolution in the 18th Century, page 182.
[17] It is only since modern methods of drainage have been introduced (post-1949) that the Great Fen, Little Fen and Langdales have been drained. Moreover, thanks to modern machinery, the Newchurch soil fields are now held in equal esteem to the Holderness soils. Such is progress.

Alvingham, it is worth noting that riots concerning enclosure did occur throughout its history. These included:

- 1450 Jack Cade's Rebellion
- 1549 Kett's Rebellion
- 1604-1607 Captain Pouch Revolts
- 1607 Midland Revolt
- 1607 Newton Rebellion
- 1630-1632 Western Rising and Forest Enclosure

While it is more than likely that there was discontent among some of the residents of Alvingham regarding enclosure, there is no record of this.

4.2 Advantages

After enclosure had been completed, the land allotted to each proprietor was now completely under his/her control, no longer being tied to restrictive procedures of the community. He/she was able to experiment with new ideas and techniques, improving methods and profits as he/she did so.

If the proprietor was allotted enough land on which to graze his/her cow(s) or sheep[18] and if he/she had the initiative to improve his/her livestock, selective breeding would have high-yielding effects. The livestock no longer mixed with other animals previously encountered on the commons, thus diseases were checked much more easily, considerably reducing the number of animals lost to sheep rot and cattle plague. Further improvements were also achieved by selection of seed which could increase yields as much as four- to five-fold.

[18] Studying appendix 2, it can be seen that most proprietors in Alvingham were allotted enough land for both arable and pasture use.

Hedges or fences which had been planted/erected during enclosure made the parish less susceptible to wind; corn was not laid to such an extent as had occurred before enclosure and varieties were less inextricably mixed. The shelter that enclosure created enabled the herds a longer grazing period towards the end of summer. It also enabled calving and lambing to proceed earlier in the spring.

Having been allotted one or more blocks of land, those proprietors wishing to drain their land could now do so without the consent of their fellows and the advantages gained by carrying out such a project were enormous.

Figure 1: Great Fen Occupation Lane

Disputes over issues such as rights of way, which had arisen prior to enclosure, no longer existed as all possible grievances had been resolved by the commissioners. The proprietor, now having one block of land rather than narrow strips, was able to plough and harrow both along the length and breadth of the close (as fields were called after enclosure). This reduced the infestation of couch grass and weeds in general.

Figure 2: Bottoms track, West Field drain

As shown by a comparison of the map of Alvingham in 1819, pre-enclosure, with that of 1822, post-enclosure (see appendices 3 and 4), the parish farming land became much more accessible with the building of roads such as the Great Fen Occupation Road (see figure 1) and the Bottoms Road (see figures 2 and 3), serving the West Field. Critical to the quality of all farm land is the ability to drain it and this was now possible with the excavation of drains in the East Field and West Field which presented suitable channels down which to drain the water. Comparing the maps before and after enclosure (see appendices 3 and 4), it is clear that the parish became more evenly distributed amongst landowners.[19]

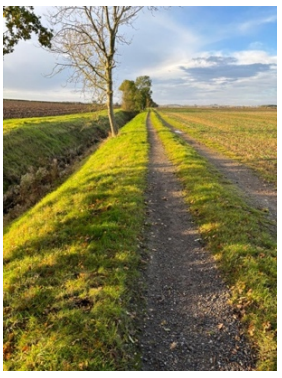


Figure 3: Bottoms track, West Field drain

[19] See allotments of land described in the Enclosure Award (appendix 2)

Generally, enclosure was very beneficial to most parties; the land produced more corn; the landowners' wealth increased; and the poor who did manage to secure work following enclosure were better employed than before. Enclosure of open fields, which required the amalgamation of smaller plots and holdings into larger agricultural units, increased the cultivated area by eliminating common and waste land that were a consequence of open-field farming. It brought them into a regular sequence of cultivation in the new crop rotation patterns which had been impossible to implement on the small strips of land prior to enclosure. Enclosure was quantitively the most important single movement affecting land use because it made all other innovations possible. All the advantages of enclosure forecast by Arthur Young – improved methods of agriculture, increased production and a strengthening of the country's economy – were realised. Moreover, had it not been for enclosures of the 17th, 18th and very early 19th Century which significantly increased home-grown food production, England would have severely struggled to meet its needs during the Napoleonic Wars (May 1803 – November 1815).[20]

4.3 General Synopsis of the Consequences of Enclosure

Enclosure pushed out smallholders, drove peasants out of the countryside and caused civil unrest in some cases. However, it allowed for the improvement of the efficiency and productivity of agricultural land, resulting in increased national food production. The enclosure of Alvingham was one of over 5000 enclosures enacted between 1604 and 1914 which together set English agriculture on the road to greater self-sufficiency.[21]

[20] British Agricultural History Society, W.E. Minchinton (2023), Agricultural Returns and the Government during the Napoleonic Wars, https://bahs.org.uk/AGHR/ARTICLES/01n1a5.pdf
[21] UK Parliament, Enclosing the Land, (2023). https://www.parliament.uk/about/living-heritage/transformingsociety/towncountry/landscape/overview/enclosingland

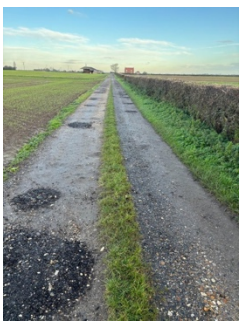
5. Continuation of Alvingham Enclosure Between 1822 and 1850

The official dates of the enclosure of the parish of Alvingham are 1819 to 1822. However, approximately only half of the parish was enclosed by 1822 and some of those enclosures were instigated before 1819.

By1822, the land of the parish had been divided between landowners, the hedges separating their respective land had been planted, and enclosure had been completed within the land owned by all the smaller landowners. This left the two largest landowners, the Bishop of Lincoln and John Maddison, with large, potentially efficient blocks of land but which were only enclosed on their boundaries. It is more than likely that the commissioners overseeing the Alvingham Enclosure advised the Bishop of Lincoln and John Maddison as to how best to enclose their large open fields but for some reason, they decided to delay its implementation.

Whilst they both agreed that enclosure was a good idea in order to consolidate their assets into large blocks of land and they had seen the effects of enclosure nearby (those of Keddington and Yarburgh) previously, they were perhaps still very suspicious of what effect enclosure may have upon their farm and farm income and/or the costs involved may have been too much to bear except over a prolonged period. Whatever their reasons were for not completing sooner, both landowners eventually continued to enclose their large blocks of land between 1822 and 1850 (see appendices 4 and 5 for the maps of 1822 and 1850 for comparison). More access tracks were constructed as part of this process; the Tops Road, America Farm Road and Poplar Farm Road (see figure 4).

America Farm Road



Poplar Farm Road

Tops Road

Figure 4: roads created during enclosure and up to 1850 for better access to the fields

6. The Varying Fortunes of Farming Between 1850 and 1950 and the Effects on the Landscape

Hedges for enclosure enjoyed around 100 years of undisturbed growth and they served a very useful role for the system of agriculture involving arable and livestock production between 1850 and 1950.

Profitability of the agricultural industry increased after enclosure up to 1873. There then followed the Great Depression of English Agriculture (1873-1896). This was caused by the dramatic fall in grain prices that followed the opening up of the American Prairies to cultivation in the 1870s and the advent of cheap transport with the rise of steamships. During this period, land values plummeted and chores such as hand-trimming of hedges were often ignored.

Slowly but surely, agriculture recovered to some extent towards the start of the First World War in 1914. The War made the Government recognise the need for the country to be more self-sufficient in food production; in 1914, the UK had to import 80% of its grain and 40% of its meat.[22] The Government passed the Corn Production Act 1917 and the Agriculture Act 1920 which protected prices. "The stability promised by these measures brought a real boom in agriculture at the end of the War."[23]

This profitable period continued only until 1921 but whilst it lasted, agriculture and all those associated with it thrived. So profitable was agriculture that many tenants took the opportunity to buy their land. Between 1918 and 1922, a quarter of the land in Britain changed hands.[24]

However, such a heavily subsidised system could not last beyond 1921, with the

[22] Farmers Weekly, Richard Munday, 10/11/2018, How farming suffered post-WW1 from government's 'great betrayal'. https://www.fwi.co.uk/news/how-farming-suffered-post-ww1-from-governments-great-betrayal
[23] Farmers Weekly, Richard Munday, 10/11/2018, How farming suffered post-WW1 from government's 'great betrayal'. https://www.fwi.co.uk/news/how-farming-suffered-post-ww1-from-governments-great-betrayal
[24] Farmers Weekly, Richard Munday, 10/11/2018, How farming suffered post-WW1 from government's 'great betrayal'. https://www.fwi.co.uk/news/how-farming-suffered-post-ww1-from-governments-great-betrayal

Government paying millions of pounds in subsidies. The Corn Production Act of 1917 and the Agriculture Act of 1920 were repealed (despite previous government assurances that farmers would be given four years' notice of any repeal – now known as 'The Great Betrayal'.) Wages and grain prices plummeted and a new depression ensued, not recovering until the late 1930s. Once again, maintenance of hedgerows was neglected but most hedges remained in place.

Profitability returned with the start of the Second World War. The government-backed 'Dig for Victory' campaign encouraged everyone to grow their own food and on farms, every acre of land that could be cropped was utilised. Less than one third of the food available in the UK at the start of World War II was home-produced and the country had to import some 20 million tons per year[25]. The German U-boat blockade inspired the Government to strive towards self-sufficiency (or as close as possible) as far as food was concerned. Indeed, it could be said that the battle to produce our own food was of equal importance to any victory gained in battle. Whilst the men were away, the Women's Land Army kept the country farming; at their peak in 1944, there were 80,000 women involved.[26]

Food production held even more importance after the War when not only did we have to feed ourselves, but also send relief to Europe; Holland and Germany in particular. Food rationing lasted until 1954.

Therefore, the 100 years since the completion of enclosure in Alvingham had been a rollercoaster of profit and loss. However, the enclosures had survived, despite many hedges having been left unkept and allowed to grow into lines of hawthorn trees (not surprising when one considers that all hedge-cutting was done manually) (see figures 5 and 6 for a

[25] British Geriatrics Society, Michael Denham, As We Once Were; Wartime Rationing 14/11/2015. https://www.bgs.org.uk/resources/as-we-once-were-wartime-rationing

[26] Imperial War Museum, What was the Women's Land Army (2023). https://www.iwm.org.uk/history/what-was-the-womens-land-army

comparison of a hedge that has been maintained with one that has not). However, a dramatic transformation of the landscape of Alvingham was later to occur. A comparison of the map of Alvingham in 1850 (see appendix 5) to that of 1977 (see appendix 6) reveals a removal of many of the boundaries (hedgerows) created during enclosure. The majority of these were removed between 1960 and 1987. What dramatic changes in agriculture encouraged the removal of these hedges and thus created a landscape not too dissimilar to that of 1819, prior to enclosure?

Figure 5: Typical of an enclosure hedge that has not been regularly maintained

Figure 6: a hedge that has been regularly maintained; Swan Close (12-acre field) hedge

7. Changing Landscapes 1960-1997

The two most important factors that encouraged hedgerow removal were:

1. Government-subsidised drainage 1961-1986
2. Mechanisation

7.1 Government-Subsidised Drainage

Drainage is the single most important prerequisite of a healthy soil for the purposes of arable farming. Enclosure had enabled all landowners to drain their land; at the time, this had to be done manually. After the Second World War, the UK Government was financially broke but was determined to make the country as self-sufficient as possible with regards to food production. To help farmers achieve this, the Government subsidised drainage schemes to 50%-60% of total costs. This subsidy was available between 1961 and 1986. The laying of drains was now fully mechanised and systems laid were very efficient. Figures show a very rapid expansion in the late 1960s to a peak in the mid-1970s of 271,810 acres (110,000 ha) of land being drained per year[27]. However, the drainage schemes encouraged the removal of

[27] G. Spoor, Drainage developments in the United Kingdom between 1961-1986, 2023. https://edepot.wur.nl/71534

hedges. For example, on the author's farm, one potential field of 11½ acres was divided by hedges into three closes. To drain three closes would be inefficient and costly so all hedges were removed and one efficient cost-effective system laid.

The amalgamation of fields increased yields due to a reduction of the number of headlands on the farm. Headlands are the areas at each end of the field where all machinery turns around. This causes compaction and reduces yields. Therefore, if four ten-acre fields are amalgamated to a forty-acre field, the headland area is reduced by 50%. Furthermore, four hedges may have been removed, creating more land area and a much more suitable field size for larger machinery to work efficiently.

Such actions were repeated throughout the country, laying the foundations for progressive and more economical methods of farming, enabled by mechanisation.

7.2 Mechanisation

Steam engines had been used as early as the 1790s. These were big stationary engines built into barns to drive threshing machines. During the 19th century, steam-powered tractors became available for sale, reaching a peak in the 1890s. By the early 20th century, during World War I, more powerful petrol tractors became available, particularly the Fordson tractor which went into production in 1917 and sold circa 750,000 units worldwide between 1917 and 1928[28]. Mechanisation progressed and slowly became more sophisticated and more importantly, cost effective enough for all farms to use them; formerly, only wealthy, large landowners could afford them. The first tractor did not arrive on the author's farm until 1947.

As tractors and the equipment they pulled behind them developed, so did the width. Initially, tractor power was the limiting factor, the first ones producing around 20 horsepower. By the 1960s, 90-130hp was available and with it, machinery up to four metres

[28] Tractor Data, Fordson Tractors 1917 to 1950, 2023. https://www.tractordata.co.uk/fordson_to_1950/

wide. Such equipment is best used in fields of a minimum size of ten acres (4ha). The width of machinery and horsepower of tractors continued to increase throughout the rest of the 20th century so the desire to use this much larger and more powerful equipment in ever larger fields further propelled hedgerow removal.

By the time the drainage grants had come to an end in 1986, most farmers had completed 'efficiency' schemes and were content with the larger fields and the hedges they had left in place.

If mechanisation (combined with subsidised drainage schemes) was essentially responsible for the loss of hedgerows, one very innovative invention undoubtedly saved many hedges. It was the introduction of the first flail hedge-cutter in 1961. Previously cut by hand, some mechanisation was introduced to hedge-cutting in the late 1940s through reciprocating blade cutters (see figure 7) but this still required the farmer to clear up the thorns by hand. With the flail cutter (see figure 8), the cuttings are so small that they simply disperse among the undergrowth, completely removing any manual work from the process. This enabled one man to trim miles of hedges per day. Therefore, the work involved in keeping a hedge tidy was no longer a valid reason for removing it.

Figure 7: Machine with reciprocating blade cutters that somewhat decreased hedge-cutting times

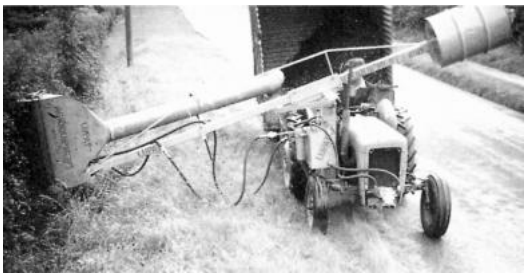


Figure 8: The first flail hedge-cutter, introduced in 1961 greatly reduced hedge-cutting times

The final safety net hedges received came from the Government in the form of the Hedgerows Regulations of 1997 which were made under section 97 of the 1995 Environment Act and came into operation in England and Wales on 1st June 1997. They provide important

protection by prohibiting the removal of most countryside hedgerows (or parts of them) without first notifying the Local Planning Authority (LPA).

As a consequence of the invention of hedge-cutters and the introduction of the Hedgerows Regulations of 1997, the landscape of the parish of Alvingham changed little between 1997 and 2023. (See appendices 6 and 7 to compare the maps of 1977 and 2023).

Did the new landscape and system of farming (introduced through drainage schemes and propelled by improved mechanisation) achieve their intended aims of increased national food production and self-sufficiency? To answer this question, one can look at the correlation between the period of transition when drainage grants were introduced and the increase in the UK's percentage of homegrown food source during that period:

1960 – 52%

1970 – 57%

1980 – 72%

1984 – 78%[29]

Clearly the new system delivered results during this period. At that time, it was deemed acceptable to remove hedges in pursuit of production. Such actions are not acceptable in the 21st century and moreover, government guidance presently dictates public money for their preservation and planting.

The improvements in productivity that were made did come at the cost of bio-diversity. In the case of Alvingham, as elsewhere, hedge removal perhaps went too far. By 1987, the large open spaces of the old East Field and West Field of 1819 returned (see figure 9). These were well drained and perfect for modern machinery but mostly only divided into fields by

Figure 9: This field, which is on the south side of Tops Road, used to be made up of 8 smaller fields. It is now one field of 90 acres

[29] NFU, NFU warns government must take domestic food production seriously (09/08/2023). https://www.nfuonline.com/updates-and-information/nfu-warns-government-must-take-domestic-food-production-seriously/

ditches or narrow banks of soil. Generally, hedges are no longer an integral part of the new system of agriculture, particularly with many farmers choosing to farm without livestock. It has not created a prairie but it has left a landscape lacking in bio-diversity and providing less opportunity for the bird population; with no wild areas for nature to thrive within.

However, in 1985, the first of three future assets to flora and fauna was planted within Alvingham parish. Ken and Richard Drinkel planted the first new field hedge in the parish since 1850 (see figure 10). Situated in the West Field, it has enhanced the appearance of a formerly very bleak open landscape. In 1991, Peter and Lyn Stevenson moved to Highbridge Road, Alvingham, purchasing a house (Field View Farm) with a small acreage of land. Driven by a passion for nature, in 1994, they dug a large pond, created a reed bed and planted 2000 trees; 90% native and 10% spruce/pine (see figure 11). They also planted hedgerows and allowed them to flourish in height and width. They have further encouraged the bird population with the erection of 46 nest boxes and 4 owl boxes. This has all created a wonderful beacon of thriving wildlife.

Figure 10: Drinkel's hedge in the West Field

Figure 11: Stevenson's woodland

Lastly, in 1995, the author's farm purchased land near the two churches and two small areas were unsuitable for modern equipment. Both areas were planted with woodland (see figure 12), the first of which is used by the local pre-school, Puddle Ducks, to teach children about nature.

Figure 12: Woodland planted in 1995 on the author's farm

Government incentives are available for more of these projects to be undertaken. It is ultimately the landowner's decision to activate them.

In summary, enclosure and its inherent planting of hedges brought huge benefits to agriculture for over 140 years. It facilitated the autonomy of farmers, allowing them to increase the productivity and profitability of their land, thus increasing the country's food production. In the latter half of the 20th Century, a drive for greater national self-sufficiency necessitated the removal of some of these enclosure hedges in order to allow for more efficient drainage, larger machinery and increased acreage. While generally successful in these aims, too many hedges were perhaps removed in their pursuit, as shown in the case of Alvingham. However, there are initiatives to help rectify this situation and increase the fauna and flora, allowing nature to flourish once more.

8. Farming in 2023

The purpose of this chapter is to convey to the reader a skeletal view of farming in 2023, with particular reference to machinery, land distribution, and government apathy.

8.1 Machinery

8.1.1 Record Breaker

The first tractor to arrive in Alvingham was purchased by a Mr. Dudding of High Street, Alvingham.[30] It was a Fordson, imported from America, and it signalled the beginning

[30] J Phil Davies, Alvingham and North Cockerington, page 29

of major mechanisation in agriculture. Up until this point, most ploughing was done by horses, with one man ploughing one acre a day. Tractors drew a two-share plough, cutting 10"-wide and 8"-deep furrows at a rate of one acre in 4 hours.[31] The author's father (born 26/6/1927) began his farming career in around 1944, when an output of ploughing two acres a day was acceptable. Just prior to his 80th Birthday (26/6/2007), a new Guinness World Record for ploughing by one man was set. On 9th March, 2005, in the Paris basin, just south of Paris, in extremely large fields up to 3.5km long, a 500-horsepower Steiger tractor on rubber tracks, pulling a 20-furrow reversible plough to a minimum depth of ten inches, ploughed 793.191 acres (321 ha) in 24 hours. That is phenomenal progress in just 61 years and simply accentuates the incessant march of mechanisation, innovation and technology.

8.1.2 Sprayers

Sprayers are used for the application of herbicides, fungicides, insecticides, liquid fertiliser and micro-nutrients to any crop. The first sprayer on the author's farm in Alvingham, purchased in the early 1960s, was mounted on the back of the tractor, had a 6-metre-wide boom and a tank size of just 360 litres. Progress in this field has again been quite incredible. Sprayers can be purchased that are mounted to the tractor, trailed behind a tractor or even self-propelled. They are manufactured by numerous brands and come with a myriad of abilities. The largest one currently operating in the Louth area is a Dammann Tridem. It is a self-propelled machine with booms of 36 meters and a 12,000-litre tank.

Self-propelled sprayers are common locally and, depending on specification, cost anywhere between £100,000 and £300,000. One unit operating at Grainthorpe has a tank capacity of 6,000 litres and boom width of 48 metres. (This model even has the option to extend to 54 metres.)

[31] J Phil Davies, Alvingham and North Cockerington, page 61

One of the ‘new generation’ trailed sprayers from John Deere has what is termed ‘green on brown’ detection. Using cameras, the sprayer has the ability to differentiate between growing plants (weeds) and soil or old crop residues, switching individual nozzles on and off to target weeds prior to the crop emerging. The John Deere might be promoted as ‘new generation’ but is already being superseded by robotic weeders which use cameras and an electric charge to kill weeds. It can differentiate between the crop and weeds due to its pre-loaded memory, thus enabling it to kill weeds in a growing crop; much more environmentally friendly and undoubtedly the way forward.

8.1.3 Combine Harvesters

The first self-propelled combine was built in America in 1886[32] but it wasn’t until 1941, when Massey-Harris introduced their No 21 model with a 12-foot cut, that demand for them really took off, with annual production of the No 21 model peaking at over 10,000 in 1949.[33]

These machines became available in the UK after the War. The first combine on the author’s farm came in the mid-1950’s with a 3.05-metre (10-foot) cut. Today, they are much bigger. New Holland has recently released a prototype with a cutter bar option of 18 metres (61 feet) (see appendix 8). Prices in the early 1960s were circa £4,000. Around 60 years later, the RRP of modern machines are staggering. The most expensive is now over £1,067,000. It has the option of a cutter bar up to 15.2 metres (49 feet and 10.425 inches) wide and an engine producing 700 horsepower. (The first tractors delivered 20hp.) Whilst there are discounts available on RRP, it is still a phenomenal price when one considers the present-day value of wheat is only £180/tonne (as of 1/11/2023).

[32] Invention and Technology, First Self-Propelled Combine (2023). https://www.inventionandtech.com/landmark_landing/87017
[33] Manitoba Agricultural Museum, Massey Harris Model 21 Combine (2023). https://mbagmuseum.ca/artifact/massey-harris-model-21-combine/

8.1.4 Seed Drills

Today, seed drills are produced by a multitude of manufacturers and are either tractor-mounted or trailed. Widths vary from 3 metres up to 24 metres with RRP of up to circa £290,000. (See appendices 9 and 10 for an example of today's seed drill prices as of November 2023.)

8.1.5 Tractors/Crawlers

There is a multitude of choice of manufacturer, horsepower, wheels and tracks. The most expensive crawler at over 600hp has an RRP in the region of £500,000.

8.1.6 Robotics

Automation is developing at an astonishing rate in the agricultural industry. Using conventional equipment which is controlled by artificial intelligence (AI), it has been shown to be possible to cultivate, plant seed, spray, fertilise and harvest a crop without direct human intervention. This is called 'hands free hectare'.[34]

Moreover, robotics is becoming the way forward for agriculture, particularly since Brexit has restricted availability of labour from Europe. Very few people in the UK are willing to pick fruit or harvest vegetables; not enough foreign workers are allowed to gain visas due to government restrictions, so staff shortages at critical times are acute, leaving fruit and vegetables to rot in the field. Automation, therefore, has to be the way forward.

8.1.7 Satellite Technology

Advances in satellite technology have had a significant impact on agriculture. Firstly, it enables all equipment fitted with the appropriate technology to steer itself on a pre-

[34] Harper Adams University, The Hands Free Hectare Project (2023). https://www.harper-adams.ac.uk/news/203518/the-hands-free-hectare-project

determined course, ensuring the field is completed in the most efficient way possible, saving time and fuel.

Secondly, it allows for the production of field maps. Such maps can be used to show the differing soil textures and their mineral analysis. To ensure soils maintain the correct medium for crop growth, nutrients are applied by equipment which reads each field map and only applies product to areas of the field that require it. This ensures that no products are wasted but are applied in the most economic and accurate way.

Soil maps can also be engaged when sowing crops. Maps are prepared for the seed drill and a target seed rate is set for each area of the field, creating a variable seed rate; less seed on 'light' soil and more on 'heavy' soil, ensuring an even crop is established and generally reducing the amount of seed used.

Once crops are growing, satellite maps can be produced regularly (e.g. weekly). They will show where the crop is thriving and where it is not and inputs such as fertiliser can be targeted on a variable rate basis in the appropriate place within each field, ensuring all products are used efficiently; hence there is no waste and it is more environmentally friendly.

Finally, satellite yield maps show how well the crop yielded in each area of the field. This can assist in decision-making in future crops, perhaps indicating areas of the field on which it may not be economic to grow crops on again.

All these potential uses of satellite technology ensure that all inputs used to grow any particular crop are applied precisely to the required areas; no inputs are wasted and the best crop possible is grown in the most environmental and efficient way possible.

8.1.8 Farmland

The incessant march of small farms being absorbed by their larger, wealthier neighbours continues as it has done throughout history. Such acquisitions are supported by machines capable of extremely high output in all areas of agricultural production. This

creates economies of scale and theoretically, a lower cost of production. Values for arable land in 2023 are circa £10,000/acre (£24,710/ha).[35]

8.2 Looking to the Future

While those in the farming industry continue to seek methods of improved efficiency through technological advancements, it would appear that the Government no longer consider national self-sufficiency to be an essential aspiration. In March 2020, Dr Tim Leunig, an economic advisor to the then Chancellor Rishi Sunak, said that the food sector was "not critically important" to the UK and farming and fishing "certainly isn't"[36]. Doctor Leunig also went on to say that the UK could import all the food it needs. Whilst this opinion might not be widely held, it does at least convey a certain apathy towards agriculture and fishing, a position that may be held by too many in authority. Present government agricultural policies do not encourage food production, a widely held view that is succinctly summed up in the letter below. (See figure 13)[37]

Farming must deliver financial return

I am one of just a few thousand UK farmers growing fruit, vegetables, potatoes and sugar beet for British supermarkets and British Sugar, and at least 85% of our total production reaches the end consumer through their doors.

With on-farm costs rising and farmgate prices falling, there is little profit back on our farms, and many are leaving these sectors, or planning to do so. We are already experiencing a massive contraction in growers and production area.

Farmers are no longer financially encouraged to produce food. Although we prefer to do this, we are now paid to provide public goods, deliver biodiversity net gain, provide renewable energy, plant trees or diversify. We will do whatever it takes to keep our farms profitable.

Guy Watson from Riverford Organics has a similar sentiment and is encouraging the public to support a petition to drive change with his Get Fair About Farming campaign.

We need a complete reset and rebalance in favour of UK growers selling UK produce into the retailers and British Sugar. Without a change, UK production will continue to reduce, replaced by imported fresh produce and sugar. Imports are grown to lower standards and at greater cost to the environment.

I just hope the supermarkets and British Sugar are listening, will work with us as partners, and share the risks and rewards more fairly between us.

Stafford Proctor
Sutton Bridge, Lincolnshire

Figure 13: Letter in Farmers Weekly, 20/10/2023

[35] Carter Jonas, Farmland Market Update, Q1 2023. https://www.carterjonas.co.uk/farmland-market-update-q1-2023

[36] The Guardian, Treasury Adviser: farming and fisheries are not important 01/03/2020. https://www.theguardian.com/politics/2020/mar/01/treasury-adviser-farming-and-fisheries-are-not-important

[37] Farmers Weekly Magazine 20th October 2023 p30-31

This letter encapsulates the concerns widely held within the industry. Poignantly, very few of the present-day policies from government mention the word 'food'. Undoubtedly, it is important to encourage environmental bio-diversity but food must come from somewhere, and importing food incurs financial and environmental costs as well as decreasing the country's stability. Another pressure point for farmers is the power imbalance in the supply chain, particularly regarding 'The Big Six' as the leading supermarkets are known. They show a consistent reluctance to pay a fair price, with prices offered even below the cost of production in many cases. This issue is highlighted in a letter sent in to Farmers Weekly (see figure 14).

Outlook for fruit and veg growers is bleak

The recently released House of Lords horticulture report paints a grim picture of the challenges faced by British fruit and vegetable farmers (News, 10 November). Its revelations about the incessant competition between supermarkets and their suppliers, and their constant driving down of prices, are very troubling.

The fact that only one major supermarket attended the inquiry to give evidence was not shocking to me at all. This dismissive behaviour mirrors the refusal of the "Big Six" to respond to Riverford Organic's open letter as part of our Get Fair About Farming campaign, urging them to curb their unfair treatment of farmers.

With the harsh winter months creeping up, the situation is bleak. Our survey uncovered that 49% of fruit and veg growers fear they might be forced out of business within the next year, citing supermarket buying behaviour as one of the leading factors.

By way of example, Britain's centuries-old apple-growing heritage is at risk of extinction, as growers are paid as little as 3p for a bag of six apples sold for £2.20 by supermarkets.

The House of Lords' report and our own survey confirm the urgent need for intervention to protect farmers and create a fairer, more resilient food system for the long term. It is imperative that the government steps in to rectify the power imbalances in the supply chain, ensuring fair treatment of growers and safeguarding the future of Britain's horticultural sector.

Only by championing our fruit and vegetable farmers can we ensure a fair and sustainable future for all. I would ask readers to sign our petition at getfairaboutfarming.co.uk.

Guy Singh-Watson, Riverford Organic
Buckfastleigh, Devon

Figure 14: Letter in Farmers Weekly, 17/11/2023

Apathy towards food production is a dangerous policy combined with an ever-increasing reliance on imports. During the COVID-19 epidemic, supermarket shelves soon emptied for imported products, leading to panic buying. Remember the common saying, 'society is three days away from food anarchy'.

Farming efficiency is forever evolving with the development of technological innovation and plant and animal genetics, all with the common aim of increased food production. However, one could speculate that in the not-too-distant future, food shortages will occur despite these improvements and just as the Government of the First and Second World Wars then asked the agricultural industry to ramp up production, so they would do again. However, we are faced with an ever-decreasing area of land on which to produce food

due to new roads, housing, woodland, solar farms, etc. Let us hope there is enough land remaining to produce enough food to meet our needs.

9. Conclusion

Enclosure brought about one of the greatest upheavals to the fabric of society, with the division of land between landowners, the removal of common land and the driving out of peasants from the countryside. It had a major impact on the landscape, creating intense patchworks of many fields (or 'closes'), all separated by newly planted hedges and boundaries (as exemplified by the case of Alvingham – see appendix 5 for the map of 1850). Most significantly, it had a huge impact on farming, engendering new methods of farming, greater efficiency and increased food production.

Since enclosure, farming and landscapes have been affected by a myriad of factors, including the fluctuations in the country's economy (for example, the Great Depression of 1873-1896) and the advancement of mechanisation but also by the country's varying need for self-sufficiency and the Government's corresponding attitude towards food production. World War II in particular stimulated a drive for greater food production, as shown by the 'Dig for Victory' campaign. Following the War, food production continued to be a top priority, particularly as food rationing continued until 1954. The Government passed the Land Drainage Act of 1961 in a drive for greater efficiency; there were huge advancements in mechanisation in this period; there were fewer landowners by this stage (in Alvingham, they reduced from 31 in 1850 to 14 in 1977); and there was a trend for keeping less livestock. These four factors all contributed to the amalgamation of fields and the removal of many hedges, thus having a significant impact on the landscape (as demonstrated in the case study of Alvingham – see appendix 6 for the map of 1977).

Farming has enjoyed a prolonged period of prosperity into the 21st century. However, government policy has now become apathetic towards food production and they are thus not protecting the country's capacity to produce food. Despite this, farmers strive for continued efficiency (assisted by technological advancements), knowing that one day, food shortages will most probably reoccur; once again, the call of government will encourage food production and farmers will need to be able to meet this demand.

This, therefore, needs to be taken into consideration when driving for environmental improvements and when weighing up other pressures on the land. One small but significant factor that can help find a balance between efficiency and ecology is the planting and conservation of hedges. In the case of Alvingham, too many hedges were removed and this has created a rather bleak landscape in some areas of the parish. It is particularly disappointing that some were removed unnecessarily. However, it is encouraging to see new pockets of nature, including new hedges and woodland in the parish, particularly when planted in a way that does not impact capacity for food production on the land. Hedges will always play a leading role in the bio-diversity of the countryside and long may they continue to be given the opportunity to do so.

Acknowledgements

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APPENDIX 1

STAMFORD MERCURY, 14 MARCH 1806, PAGE 2, COLUMN 2

Intended Inclosure of Alvingham and Yarborough

NOTICE IS HEREBY GIVEN,

THAT A MEETING of the Proprietors of Estates in the Parishes of ALVINGHAM and YARBOROUGH ..... will be held at the MASON'S ARMS INN in LOUTH ..... at the hour of Ten in the forenoon of THURSDAY, the twenty-seventh day of MARCH instant, to adjust the Terms of Commutation for Tithes, and the Compensations to be made to the Lords of the Manors of Alvingham and Yarborough aforesaid for their Waste Lands; to appoint Commissioners and a Surveyor; and to read over and settle a Draft of the Bill intended to be brought into Parliament, in the present Session, for the Inclosure of the Open Lands in the said Parishes.

By order,
R D CLITHEROW
ROBT. PADDISON

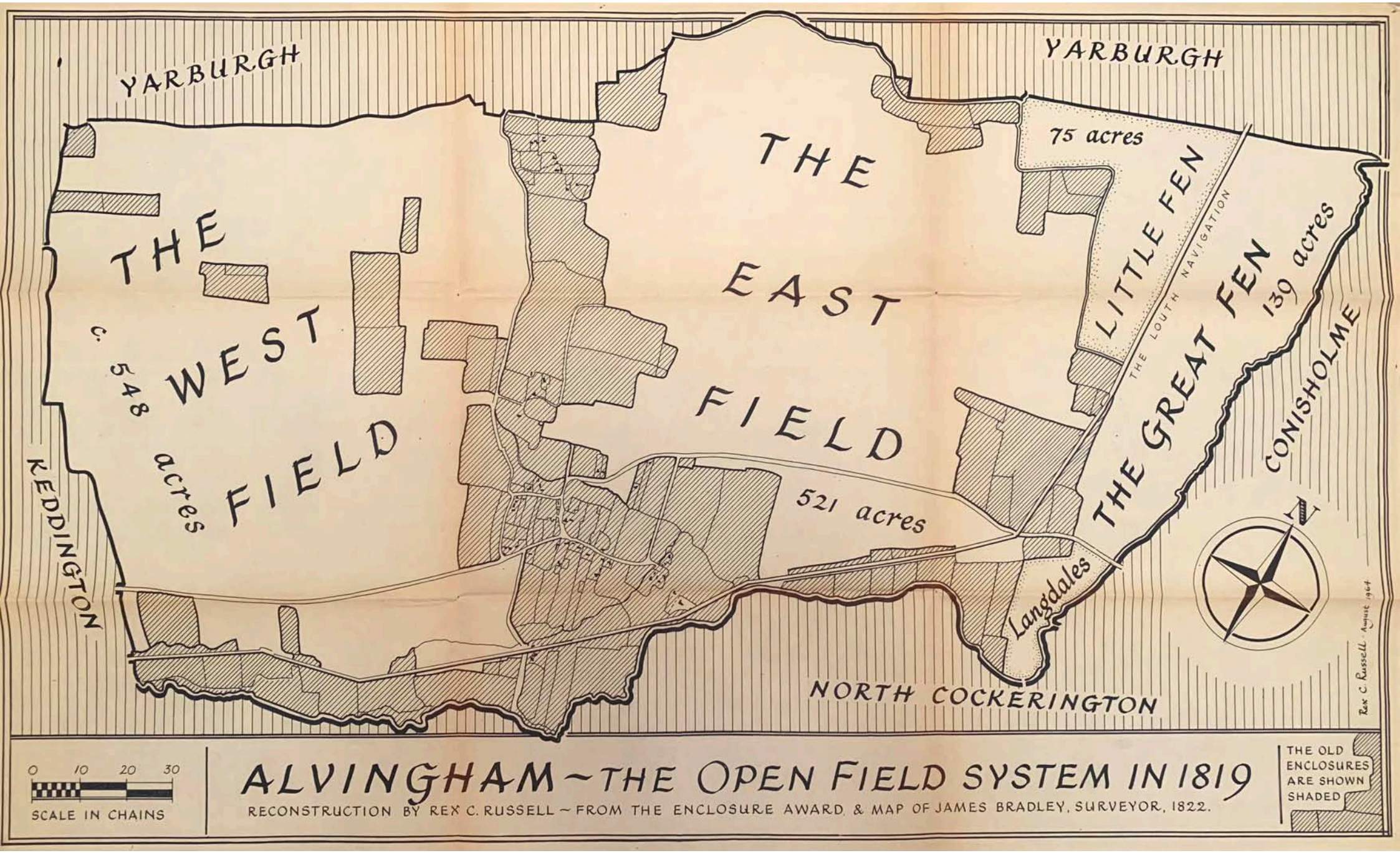
Louth, 8th March, 1806

APPENDIX 2

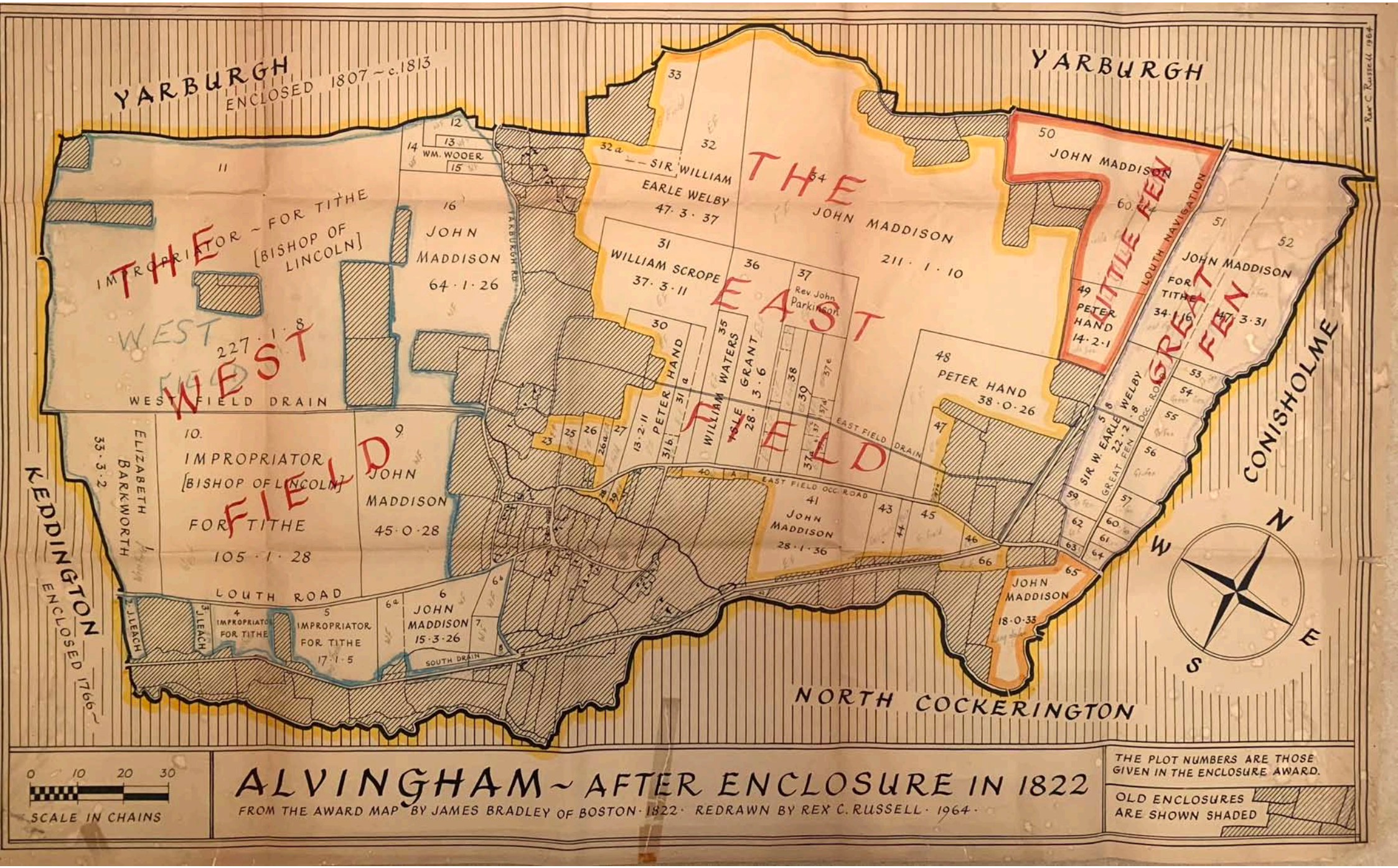
Land was awarded to two special allottees and 29 other owners, as follows:-

1. Special Allotments	Acres	Roods	Perches
The Surveyors of the Highways for road repair material	0	2	0
The Bishop of Lincoln, and his Leessee, John Maddison Esq., in lieu of Tithes	392	0	7
	392	2	7
2. General Allotments			
a. John Maddison, Esq	514	0	29
b. Sir William Earle Welby, Bart	77	2	5
c. Peter Hand	74	1	13
d. William Scrope, Esq	51	3	26
e. Elizabeth Barkworth	33	3	2
f. Isle Grant	32	2	9
g. Reverend John Parkinson	24	0	11
h. William Waters	12	2	12
j. Thomas and John Parker	12	2	11
k. Reverend William Chaplin	10	3	28
l. Robert Cook	10	1	14
m. Cornelius Parker	9	2	33
n. Reverend George Grantham	7	0	16
o. William Wooer	6	2	19
p. Reverend George Oliver	6	2	6
q. Reverend William Wilkinson	6	1	37
r. William Rose	6	0	35
s. The Churchwardens of Alvingham	5	1	32
t. John Leach	4	2	27
u. Andrew Dunham	3	1	23
v. Robert Lucas	3	1	19
w. William and Edward Parker	3	0	6
x. Thomas Young	2	0	39
y. Joseph Wilson	1	2	38
z. Waldo Coningsby Sibthorpe, Esq	1	2	31
aa. Reverend John Waite	1	2	27
bb. John Baldock	1	1	28
cc. Nicholas Edmond Yarburgh	1	1	27
dd. Robert Robinson	1	0	31
	928	2	28

Appendix 3: Map of Alvingham in 1819

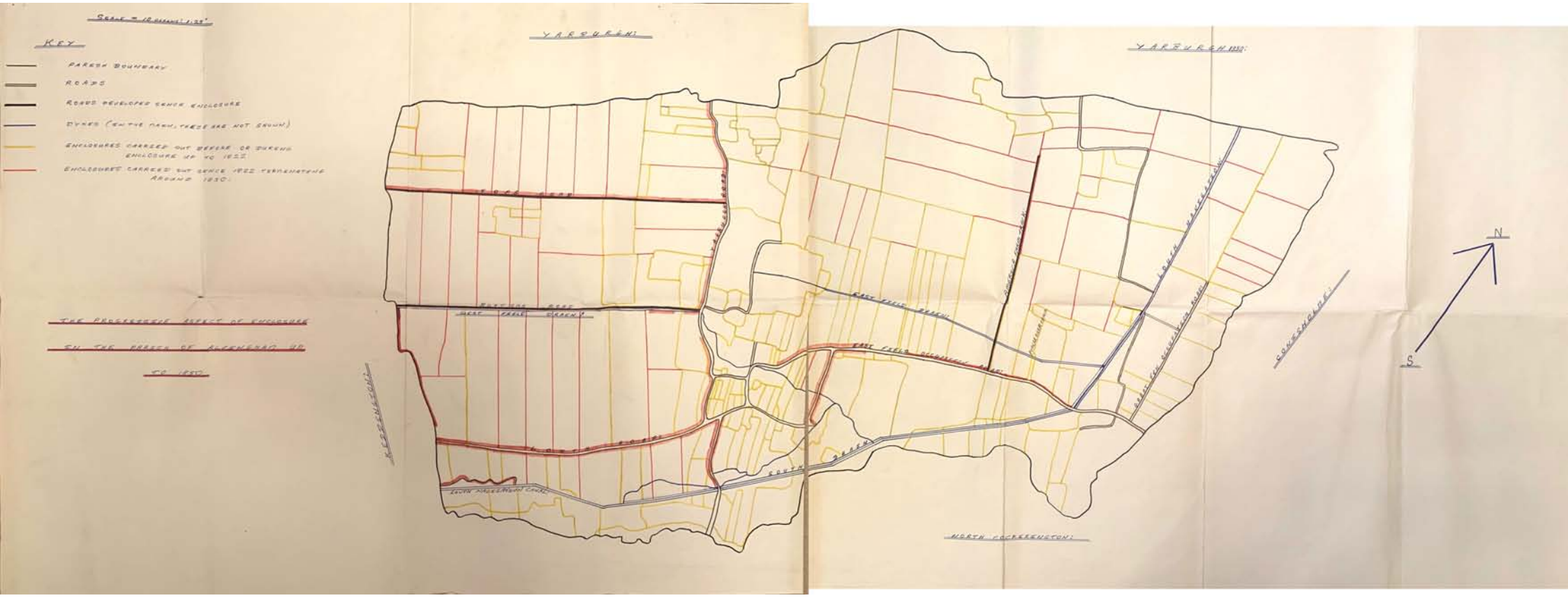


Appendix 4: Map of Alvingham in 1822



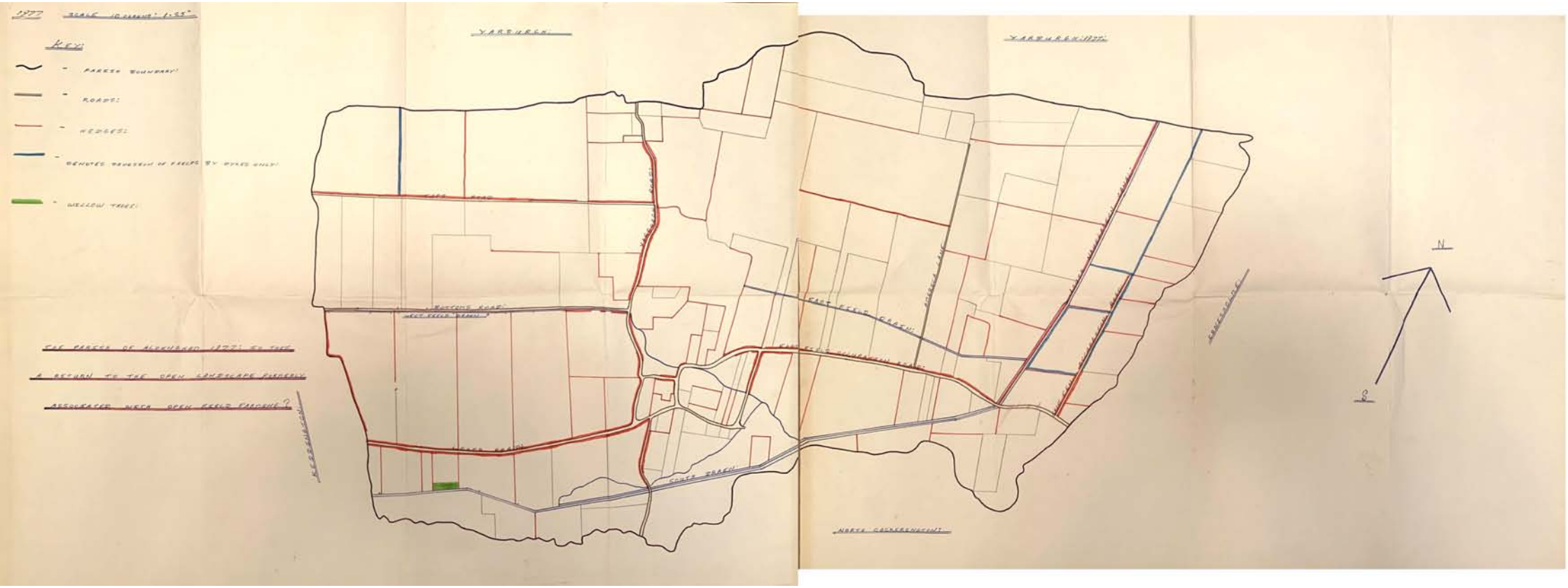
Appendix 5: Map of Alvingham in 1850

Zoom in to view details



Appendix 6: Map of Alvingham in 1977

Zoom in to view details

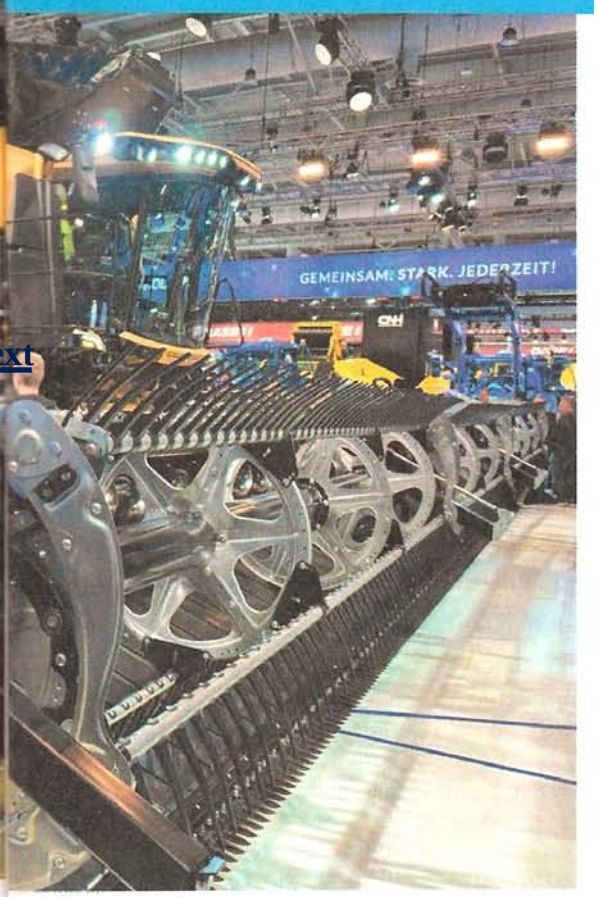


Appendix 7: Map of Alvingham in 2023

Zoom in to view details

Appendix 8: New Generation Combine Harvester 2024

BATTERY POWER – P64
Merlo goes electric with full-size Turbofarmer telehandler



Text

NH UNLEASHES BIGGEST-EVER COMBINE – THE CR11

New Holland has pulled the wraps off its highest capacity combine yet, which it hopes will leave the competition choking behind its chaff spreader.

Dubbed CR11, the machine has been some 10 years in development and shares little in common with the current 10.90 flagship, other than the basic configuration of the internals. This means threshing is still carried out by twin rotors, but these are larger 24in units that offer considerably higher throughput.

Other headline stats include a 775hp six-cylinder FPT C16 engine mounted to the side of the machine for better weight distribution, a 20,000-litre grain tank, 210-litre/sec unloading speed and the option of fitting a 15m (50ft) MacDon draper header. The driveline has been simplified too, with 25% fewer components and no chains.

As well as pushing for throughput, engineers have worked hard to keep losses to a minimum. They've introduced a double cleaning shoe – one behind the other – with two upper sieves, two lower sieves, two clean grain augers and two sets of pressure sensors to monitor cleaning shoe load.

This so-called Twin Clean system also adjusts automatically and has a function that senses if one side of the sieves is getting overloaded, before shaking the cleaning shoe to even distribution.

Residue management has been considered too, with a with a new chopper and chaff spreader setup that's capable of giving a consistent spread at cutting widths up to 18m (60ft). This automatically adjusts rotor speeds and vanes according to information sent from a radar that monitors the consistency of the spread pattern. Due to the amount of crop that should be flowing through the machine, New Holland has also come up with a method for quickly shifting blockages without operators having to leave the seat.

The cab has had a few upgrades, such as a higher-grade seat and a 360deg camera system, and it houses the firm's latest Intelliview 12 display as used in its high-horsepower tractor ranges. The CR11 is being built at the firm's Zedelgem factory in Belgium and will form a new range above the existing CR series machines.

We hear there will be just one model to start with, and if a more powerful version is introduced, it will need to have a larger engine block fitted.

Production machines will be painted in the firm's standard livery and UK machines will be delivered on tracks rather than wheels and tyres.

Most will be teamed with the 15m (50ft) MacDon draper header, but trials have been carried out in Australia with a huge 18m (61ft) version. Order books are opening in July 2024, with deliveries scheduled for harvest 2025.

Appendix 9: An Example of Seed Drill Prices

Maschio Gaspardo's Gigante Pressure disc coulter drill

The Weaving Fenix Drill stitching in grass seed

PHOTOGRAPHY: MASCHIO GASPARDO, WEAVING

Model	Mounted or trailed	Width	Seed rows/spacing	Coulter rows	Hopper capacity	Seed/fertiliser	Weight	Price
Avatar 3.16 SD Fert	Trailed	3m	18 x 167mm	Two separate rows	3,800 litres	Seed and fertiliser	4,820kg	£87,710
Avatar 4.16 SD Fert	Trailed	4m	24 x 167mm	Two separate rows	3,800 litres	Seed and fertiliser	6,000kg	£105,900
Avatar 6.16 SD Fert	Trailed	6m	36 x 167mm	Two separate rows	5,000 litres	Seed and fertiliser	7,100kg	£141,290
Avatar 8.16 SD Fert	Trailed	8m	48 x 167mm	Two separate rows	5,000 litres	Seed and fertiliser	9,400kg	£183,420
Avatar 8.25 SD Fert	Trailed	8m	32 x 250mm	One inline row	6,400 litres	Seed and fertiliser	10,200kg	£175,828
Avatar 9.25 SD Fert	Trailed	9m	36 x 250mm	One inline row	6,400 litres	Seed and fertiliser	10,800kg	£176,800
Avatar 10.25 SD Fert	Trailed	10m	40 x 250mm	One inline row	6,400 litres	Seed and fertiliser	12,000kg	£181,850
Avatar 12.25 SD Fert	Trailed	12m	48 x 250mm	One inline row	6,500 litres	Seed and fertiliser	13,000kg	£191,950
Avatar 18 M	Trailed	18m	72 x 250mm	One inline row	12,600 litres	Seed and fertiliser	15,000kg	£290,300

Distributed by Horsch. ***Note*** *Avatar 3.16 to 8.16 seed and fertiliser models have dual compartment hopper; Avatar 8.25 to 12.25 and 18 M have a triple compartment hopper as standard, dual compartment optional.*

JOHN DEERE

750A All-Till **Format** Hopper on frame, rear wheels. **Pre-coulter tool** None. **Seed coulters** Single-disc 457mm diameter openers set at 7deg angle with coil spring and hydraulic pressure system, plus optional 500kg ballast giving up to 250kg loading. **Depth control** Wheel close coupled alongside disc opener. **After coulters** Seed row press wheel and angled covering disc on coulter arm, plus cast iron closing wheel. **Fertiliser** None.

750A All-Till	Trailed	3m	18 x 166mm	Two separate rows	1,800 litres	Seed	2,710kg	£80,606
750A All-Till	Trailed	4m	24 x 166mm	Two separate rows	1,800 litres	Seed	4,640kg	£102,454
750A All-Till	Trailed	6m	36 x 166mm	Two separate rows	2,300 litres	Seed	6,800kg	£143,352

Distributed by John Deere.

MA/AG — DISCONTINUED

Sicura SSM — DISCONTINUED

Sicura SSP — DISCONTINUED

MASCHIO GASPARDO — NEW LISTING

Gigante Pressure **Format** Pressurised hopper with air seed distribution mounted on drawbar ahead of seed coulters; DP models have non-folding coulter frames. **Pre-coulter tools** None. **Seed coulters** 475mm diameter plain, serrated or notched discs slightly angled in both planes with seed boot alongside, mounted on trailing arm with double coil spring providing up to 200kg down pressure. **Depth control** Cast or rubber gauge wheel located alongside disc opener. **After coulters** Steel conical press wheel mounted on coulter assembly by independent rocker arm with adjustable coil spring pressure; optional flexible tine covering harrow. **Fertiliser** Metered separately into seed tube.

300/17 DP	Semi-mounted	3m	17 x 150mm	Two separate rows	2,840 litres	Seed and fertiliser	3,495kg	£74,650
300/19 DP	Semi-mounted	3m	19 x 180mm	Two separate rows	2,840 litres	Seed and fertiliser	3,760kg	£78,350
400/22 DP	Semi-mounted	3.96m	22 x 180mm	Two separate rows	2,840 litres	Seed and fertiliser	4,280kg	£83,760
400/22	Trailed	3.96m	22 x 180mm	Two separate rows	2,840 litres	Seed and fertiliser	5,240kg	£94,690
400/26	Trailed	3.9m	26 x 150mm	Two separate rows	2,840 litres	Seed and fertiliser	5,643kg	£105,290
500/28	Trailed	5.04m	28 x 180mm	Two separate rows	3,410 litres	Seed and fertiliser	6,320kg	£122,050
600/33	Trailed	5.94m	33 x 180mm	Two separate rows	3,410 litres	Seed and fertiliser	6,960kg	£130,235
600/40	Trailed	6m	40 x 150mm	Two separate rows	3,410 litres	Seed and fertiliser	7,640kg	£144,245

Distributed by Maschio Gaspardo. ***Note*** *Prices based on rubber depth wheel configuration.*

MOORE — * ADDITIONAL MODELS

Uni-drill **Format** Mounted models – hopper with Accord metering and air distribution mounted on frame; trailed models – as mounted plus rear wheels and drawbar. **Pre-coulter tools** None. **Seed coulters** 410mm notched disc opener with tungsten seed coulter alongside mounted in pairs on trailing arm with rubber suspension inserts in frame clamp; ballast and hydraulic pressure adjustment to 120kg per opener. **Depth control** Mounted – rear packer roller; trailed – hydraulic discs. **After coulters** Güttler packer roller with alternating 450mm and 500mm diameter serrated cast rings or optional tyre packer with levelling paddles. **Fertiliser** None.

Uni-drill 24 Base **	Mounted	3m	24 x 125mm	Two separate rows	n/a	Seed	1,700kg	£17,595
Uni-drill 32 Base **	Mounted	3m	32 x 90mm	Two separate rows	n/a	Seed	1,800kg	£20,750
Uni-drill 24 Base **	Trailed	3m	24 x 125mm	Two separate rows	n/a	Seed	2,300kg	£25,050

ULTIMATE GUIDE SEED DRILLS

Mzuri's 4.8m Pro-Til 480

PHOTOGRAPHY: MZURI

Text

Model	Mounted or Trailed	Width	Seed Rows/Spacing	Coulter rows	Hopper capacity	Seed/Fertiliser	Weight	Price
HORSCH								* FEWER MODELS
Sprinter ST + SW Format ST models – hopper on frame, rear press wheels; SW models – hopper on seed cart, coulter frame behind. **Pre-coulter tools** Optional front-mounted tyre packer. **Seed coulters** Duett double seed row wing tine points on parallel linkage assembly with coil spring pressure up to 285kg. **Depth control** Rear tyre packer and front support wheels or optional tyre packer. **After coulters** Two rows of flexible tines and 650mm to 780mm diameter in-line or staggered-row tyre packer. **Fertiliser** Horsch PPF system places fertiliser below seed depth; Sprinter ST – dry fertiliser only; Sprinter SW – dry or liquid fertiliser.								
Sprinter 4 ST	Trailed	4m	14 x 286mm	Three separate rows	2,800kg	Seed	4,000kg	£74,300
Sprinter 4 ST	Trailed	4m	14 x 286mm	Three separate rows	5,000kg	Seed and fertiliser	4,550kg	£85,330
Sprinter 6 ST	Trailed	6m	22 x 273mm	Three separate rows	3,500kg	Seed	5,400kg	£102,740
Sprinter 6 ST	Trailed	6m	22 x 273mm	Three separate rows	5,000kg	Seed and fertiliser	6,020kg	£114,010
Sprinter 8 SW	Trailed	8m	28 x 285mm	Three separate rows	8,000kg	Seed and fertiliser	10,750kg	£183,170
Sprinter 9 SW	Trailed	9m	30 x 300mm	Three separate rows	8,000kg	Seed and fertiliser	11,500kg	£198,260
Sprinter 10 SW	Trailed	10m	34 x 300mm	Three separate rows	8,000kg	Seed and fertiliser	12,200kg	£213,020
Sprinter 12 SW	Trailed	12m	40 x 300mm	Two separate rows	8,000kg	Seed and fertiliser	14,200kg	£254,300
Note Sprinter ST - frame-mounted hopper; Sprinter SW - trailed hopper, rear-mounted coulter frame.								
Sprinter NT Format 11 NT / 15 NT - hopper on seed cart, coulter frame behind; 24 NT - hopper on seed cart trailed behind coulter frame. **Pre-coulter tools** - none. **Seed coulters** Chisel tine coulters on trailing arms protected by rubber mounting-clamp inserts allowing sideways and upwards deflection. **Depth control** Semi-pneumatic press wheel attached to coulter arm. **After coulters** None. **Fertiliser** Dry or liquid placed at seed coulter.								
Sprinter 11 NT	Trailed	10.8m	36 x 300mm	Three separate rows	12,000kg	Seed and fertiliser	12,350kg	£148,620
Sprinter 15 NT	Trailed	15m	60 x 250mm or 30 x 500mm	Three separate rows	12,000kg	Seed and fertiliser	13,500kg	£160,910
Sprinter 24 NT	Trailed	24m	80 x 400mm	Three separate rows	17,000kg	Seed and fertiliser	21,200kg	£242,890
*Distributed by Horsch. **Note** Sprinter 15 NT price for 250mm row spacing. Sprinter 11 NT - coulter frame mounted on rear of seed wagon; Sprinter 15 and 24 NT – seed wagon trailing coulter frame.*								
KÖCKERLING								
Ultima Format CS 300 and CS 400 – hopper on frame; CS 600 – hopper on drawbar and frame, rear wheels ahead of finishing tools; 800 and 900 models – hopper on seed caddy with rear-mounted seeding frame. **Pre-coulter tools** Optional leading paddle tines. Individual press wheels carrying 70% of drill weight. **Seed coulters** Integrated with press wheels – 60mm wide coulter boot. **Depth control** Leading press wheel, central hydraulic adjustment. **After coulters** Seed covering and levelling sweeper tines, steel U-profile consolidating roller and flexible harrow tines. **Fertiliser** Applied via disc coulters placing fertiliser between seed rows.								
CS 300	Trailed	3m	16 x 185mm	Five staggered rows	2,800 litres	Seed	4,570kg	£68,100
CS 400	Trailed	4m	22 x 185mm	Five staggered rows	2,800 litres	Seed	5,720kg	£84,300
CS 600	Trailed	6m	32 x 185mm	Five staggered rows	3,300 litres	Seed	9,000kg	£120,100
CS 600 Combi	Trailed	6m	32 x 185mm	Five staggered rows	3,300 litres	Seed and fertiliser	9,000kg	£134,300
800	Trailed	8m	44 x 185mm	Five staggered rows	4,000 litres	Seed	11,000kg	£168,800
Distributed by Samagri.								
KRM SOLA								
Soladrill 1909 SM Format Hopper on coulter frame. **Pre-coulter tools** None. **Seed coulters** Narrow tungsten carbide points carried on rigid, coil-spring tensioned tines. **Depth control** Ratchet-adjusted land wheels. **After coulters** Two-row flexible tine covering harrow. **Fertiliser** Optional small hopper for applying microgranular fertilisers or small seeds.								
1909 SM 4.0	Mounted	4m	25 x 160mm	Four separate rows	2,000 litres	Seed	2,100kg	£46,480
1909 SM 4.8	Mounted	4.8m	29 x 160mm	Four separate rows	2,000 litres	Seed	2,200kg	£48,440
1909 SM 5.0	Mounted	5m	31 x 160mm	Four separate rows	2,000 litres	Seed	2,260kg	£48,440
1909 SM 6.0	Mounted	6m	37 x 160mm	Four separate rows	2,000 litres	Seed	2,350kg	£51,090
1909 SM 7.0	Mounted	7m	43 x 160mm	Four separate rows	5,500 litres	Seed	3,700kg	£54,160
Soladrill SM-P Elektra As SM but with isobus-controlled metering and a pressurised hopper with external seed distribution heads.								
SM-P 4.0	Mounted	4m	25 x 160mm	Four separate rows	2,000 litres	Seed	2,200kg	£57,480
SM-P 4.8	Mounted	4.8m	29 x 160mm	Four separate rows	2,000 litres	Seed	2,300kg	£56,830
SM-P 5.0	Mounted	5m	31 x 160mm	Four separate rows	2,000 litres	Seed	2,360kg	£56,930