

CLAYDON CUSTOMER FARM FOCUS



Donald Macaulay: "Direct strip seeding has delivered numerous benefits."

Switching from conventional cultivations to direct strip seeding has brought multiple benefits for Essex farming business.

Fuel used to establish crops has been reduced by more than 50 per cent, tractor hours are a fraction of what they were, timeliness and soil condition have been significantly improved and headlands are now much more productive, increasing average yields.

Donald Macaulay farms with his brother Stuart at Beckingham Hall, Hardy's Green near Colchester. In 1986, after completing their agricultural studies at nearby Writtle University College, they established I J Macaulay & Sons. They now farm 820 acres, 90 of which they own, 200 which is on an FBT, together with land their grandfather took on in 1933 when he became a tenant of the adjacent Birch Estate.

Until recently the Macaulay brothers produced a significant area of root crops, including potatoes and onions to supply local markets. However, remaining competitive in this sector would have meant increasing the scale of their involvement and considerable additional investment. They stopped growing sugar beet too, due to increasing haulage costs, declining profitability and the amount of soil compaction caused during harvesting.

Instead, they decided to focus on combinable crops; this year, crops included 285 acres of Skyfall winter milling wheat, 130 of oilseed rape, 88 of winter beans, 75 of winter linseed, 45 of borage, 100 of spring barley and 60 acres of soya beans. The brothers now only grow first wheats, preferring a greater acreage of break

crops to ensure a good rotation. Winter linseed has been added recently which, together with oilseed rape, allows fields to be cleared early and compost from a nearby green waste processing site to be applied.



The Macaulays purchased their 4.8m Hybrid in May 2015.



FOCUS ESSEX

Having grown peas for years, the brothers became disillusioned with unexplained inconsistency of yield and crop damage from pigeons. They've always liked to experiment with different crops and have tried various alternatives over the years, including hemp, lupins, rye and even pumpkins. This year, they have 60 acres of soya beans, after growing 40 acres for the first time in 2017. Like all the other crops on the farm these were established using the Claydon System.

CHANGING THE APPROACH

"We used to use a Sumo Trio one-pass stubble cultivator, followed by a Kuhn power harrow and Sulky Xeos Pro drill combination to establish combinable crops. The system tended to over-work our soils, which run from gravel to boulder clay, so we looked at alternatives," Donald explains.

FARM FACTS

Farmer: Donald Macaulay

Location: Essex

Area farmed: 820 acres

Soil: variable, gravel to boulder clay

Cropping: Skyfall winter milling wheat, oilseed rape, winter beans, winter linseed, borage, spring barley, soya beans

Beckingham Hall is a demonstration farm for Frontier Agriculture, with cereals and oilseed rape varieties in trials this year. In 2015, the Macaulays suggested that direct drilled plots be established to allow visitors to compare the results with standard farm practice. The brothers were also interested in ways to simplify crop establishment and reduce costs, so this was an ideal opportunity for them to see actual results on their own farm.

Three drill manufacturers were invited to establish adjacent plots using a Sumo DTS, Vaderstad Spirit and Claydon Hybrid. They would then return for a summer open day to show visitors their plots and explain what had been done.

"For us, it came down to a choice between the Sumo and Claydon as we felt that the Vaderstad would be too cumbersome, especially in some of our smaller fields where we must reverse into corners," Donald explains.

COMPARING SYSTEMS

"We bought our Claydon Hybrid in May 2015 after visiting the factory. We chose the 4.8m version because the additional output over the 3m would greatly reduce the time required to drill the farm. Having the larger model also meant that our 230hp John Deere 7230R would clock up fewer hours and ensure optimum timeliness (the higher output meant there would be no pressure to operate when conditions were less than optimal). It is



equipped with variable rate seeding and we have installed a 1000-litre tank on the tractor's front linkage so that liquid fertiliser can be applied while drilling.

"Marcus Mann is a very progressive agronomist at Frontier, who took over just before we purchased the Claydon drill. He has always been keen to follow what we are doing. In the first year we drilled half the winter wheat with the Claydon Hybrid and half using our existing system to provide a large-scale comparison and confirm that we were on the right track.

"At harvest there was no difference in yield between the two systems, but those which had been Claydon drilled involved much less time, fuel and cost, so we used it for all the winter wheat in 2016. Then, as we started to get to know the drill better and had more confidence we started using it for other crops.

"Borage has a bushy growth habit and can be difficult to establish well. Last year, some conventionally drilled crops in this area were very patchy. Ours sown with the Claydon, in bands 300mm apart, went into moisture and were the best we've ever seen.

GREAT RESULTS WITH LINSEED

"When establishing winter linseed, we took advice from Taig Norman (Claydon's Regional Manager in the East of England) because the seed is small and needs moisture, so it benefits from going into undisturbed soil. I wasn't sure how winter linseed would perform in the wider bands but need not have worried and we were delighted with the results.

"Soya is very demanding in terms of establishment because their fixed-length hypocotyl means that the crop cannot grow if drilled any deeper than 1.5".



The 4.8m Claydon Hybrid drilling Propino spring barley at Beckham Hall in April 2018.

Accurate seed placement is vital, so when we drilled the crop in early May we had to be careful not to go too deep."

STRAW HARROW PROVES EFFECTIVE

After success with the Claydon drill, Donald and Stuart found that fields became far more level and uniform. This made spraying with their 24m John Deere 740i trailed sprayer significantly faster and easier because the boom stayed more stable in operation. Encouraged by the results, they subsequently purchased a 7.5m Claydon Straw Harrow to enhance the system's effectiveness but hadn't fully appreciated its abilities until using it for the first time last autumn.

This fast, low-cost implement evens out crop residues, shaking out the seeds and heads missed by the harvester, producing a small amount of tilth to germinate volunteers and weeds. At the same time, it disturbs slug eggs and kills large numbers of slugs, especially if used when they are active. Slugs can't deal with being hit by a fast-moving steel tine; since using the Straw Harrow, populations have dropped dramatically.



February 2018: this winter wheat was drilled autumn 2017 following soya beans. Cover crops have been tried on the farm, and at one time a large acreage was grown, but they never dried the land out as the Macaulays had hoped, attracted rabbits and caused slug numbers to increase, so the brothers stopped growing them.



February 2018: even after a cold, wet winter, crops were looking strong and healthy. Since changing to the Claydon System four years ago, worm numbers have risen significantly. The structure and supportiveness of the soil has also improved dramatically, allowing following machinery such as the sprayer and fertiliser spreader to stay on top of the land, travelling without causing ruts, even after heavy rain.



Establishment of winter beans has been significantly improved - particularly on headlands - using the Claydon System, the crop providing an excellent entry for winter milling wheat.

The Straw Harrow's brushing action also kills cotyledon weeds and grasses by breaking off the growing shoots, as well as creating a micro-tilth in the top 25-30mm of soil. The implement can also be used to harrow in and improve seedbeds after drilling.

Operating at up to 25kph, it is so fast and cheap to use that the operation can be repeated every 7 to 14 days when conditions are favourable. Very little soil is moved so that if wet weather follows, this mini-tilth dries quickly, allowing either another pass with the Straw Harrow or drilling.

Even if green shoots are not visible on the surface, weeds and volunteers will still be growing under the straw, and moving the soil at this stage will achieve a 70% kill. Repeating this several times greatly reduces weed and slug populations, without the use of expensive agchems.

"The Straw Harrow levels the surface and does an excellent job," Donald confirms. "It works best when the soil is dry on the surface but moist enough underneath to allow it to produce a shallow tilth. We

use it at a slight angle to the direction of combining on the first pass, then again at a different angle, to help level the surface.

"Using the Claydon System to establish crops has certainly made us think much more carefully about the soil biology, and how mycorrhizal fungi activity can be increased to maximise crop performance. The changes have resulted in our best-ever yields of up to 12t/ha from winter wheat and the productivity of headlands has been much improved."



"Caring for the soil is so important," Donald Macaulay emphasises. When a neighbouring farm started to take in all the local council's green waste and turn it into compost Donald and Stuart began using the product and, in combination with the Claydon System, it has made the soil much easier to work. High in potash, the compost releases nitrogen which is locked up in the lignin of the woody material over several years, additionally the farm has not needed to purchase any bagged P and K for six years.



Stuart Macaulay



Each year 4500 tonnes of compost are spread on a third of the farm's relatively easily-worked soils after harvest. Two 18t spinning-disc machines are hired for the job and distribute up to 1000 tonnes a day evenly at 12m centres, at a rate of 25t/ha.