



Claydon 4m Hybrid Drill has been establishing crops at Morrision Farms since 2010.

## Direct strip seeding revitalises soils and boosts worm populations on Scottish estate in Ayrshire

"The Firth of Clyde often turns brown after heavy rain as a result of topsoil being eroded from farmland and washed down into the water courses which feed into it," Lord David Kennedy states, describing one of the major environmental issues affecting this picturesque region.

"This is very visible and does not reflect well on the farming community. It is caused by a number of field operations, from traditional cultivation methods based on ploughing, min-till techniques and power harrow/drill combinations, to the use of stone separators, bed-formers and planters to establish the potato crop," Lord David adds.

"The lack of stubble roots left in the ground means that there is nothing to hold the topsoil in place, so it washes away easily, the problem being exacerbated by our region's rolling landscape and numerous watercourses. As an industry we must stop trying to beat Mother Nature into submission with horsepower and work in harmony with her.

"We were once part of the problem as those methods were used here at Morrision Farms many years ago. Our mainly light to medium sandy loam soils often washed

onto roads or into ditches after ploughing, which was an unsustainable situation and not good for our public image.

"We ploughed land most months of the year but stopped in the late 1990s and after 10 years of using min-till went to direct strip seeding in 2010. This approach has dramatically reduced erosion of the soil



### FOCUS AYRSHIRE

#### FARM FACTS

**Farmer:** Lord David Kennedy

**Location:** Maybole, Ayrshire

**Area farmed:** 1,000 acres arable

**Soil:** light to medium sandy loam soils

**Cropping:** wholecrop hybrid rye, triticale, spring barley, spring beans, maize, fodder beet

and transformed its condition, productivity and ecology. It has also greatly increased my awareness and knowledge of the soil, its importance and the critical role of earthworms in fertilising, draining and aerating it. Knowing this encouraged me to participate in a survey as part of World Worm Week at the end of March 2019."



September drilling with the island of Ailsa Craig and the Firth of Clyde as a backdrop.





**Lord David Kennedy states that the Claydon System has “dramatically reduced erosion of the soil and transformed its condition.”**



## ENVIRONMENTAL INITIATIVES

A keen conservationist, Lord David studied at the Berkshire College of Agriculture and has run what is now a LEAF Demonstration Farm for almost 40 years. He currently has just one helper, David Harvey, on the 1000 arable acres which form part of his 10,000-acre estate. In 2004 the farm was the Scottish winner of the FWAG Silver Lapwing Award, reflecting its commitment to species and habitat conservation, as well as the integration of environmental management into the overall farm business.

Over the last decade Lord David has introduced a raft of measures to improve the farm’s environmental credentials and foster public understanding of farming. In addition to planting well in excess of 50 miles of mixed species hedges he has over

60 acres of wild bird plots on the farm, has created ponds and wetlands, introduced nest boxes to encourage barn owls, hosted numerous farm walks and training days, while promoting access throughout the estate. He also offers advice to neighbours on the benefits of conservation and how to create a symbiotic relationship between intensive agriculture and estate management.

Despite being in a predominantly livestock area Morriston Farms is all arable. Grassland is let to local farmers and Lord David focuses on producing arable crops to fulfil local requirements, having always been very conscious of the need to minimise food miles.

In recent years traditional winter wheat and winter barley have been replaced

by wholecrop hybrid rye and triticale to supply an anaerobic digester which is part of the combined heat and power plant at William Grant & Sons distillery in nearby Girvan. Other crops currently produced include spring barley, spring beans, maize and fodder beet. Except for the latter all are established using the Claydon System of direct strip seeding, which Lord David says has transformed the estate’s ecology and the way he farms. He states:

“In the 1980s I used to grow a lot of early potatoes but stepped back from doing that because, being a fresh product, they needed to be sold very quickly, the market was very fickle, and the crop required massive investment. Instead I let land to a cooperative of potato growers as part of creating a good overall rotation, but the damage caused to the soil made me stop and produce spring beans instead.

“I was one of the first in the area to use a power harrow-drill combination to establish crops after ploughing because it required less labour than the system of double harrowing before drilling that we used before. Nothing else will make cultivated fields look better than a power harrow-drill combination and the crops appear to be phenomenal when they emerge, but I quickly became one of the first to stop using a power harrow-drill combination.

“I have always loved soil and seeing what this method was doing to it in terms of creating pans and erosion was just hellish. Instead I started the long, slow process of adapting to min-till, which nobody else was doing in this area at that time. It was an improvement, but I felt more could be done.

## OBVIOUS BENEFITS

“Having looked at what various direct drill manufacturers were offering it was apparent that all had significant drawbacks. Although initial cost is a factor, what really matters is the ongoing cost of ownership and this is where the Claydon Hybrid drill really scores. It is simple with few wearing parts, strong, very well made and looks like it will last forever.

“I had seen one at Cereals 2010, but before ordering wanted a one-to-one with Jeff Claydon on the basis that he had designed it and would be best placed to answer my questions. He was harvesting winter wheat when I visited his farm, so I sat alongside him on the combine and talked at length. I then spent time with his brother, Frank, who was drilling oilseed rape with a 6m Hybrid. At the end of the visit I toured the factory



where Claydon products are manufactured, right in the middle of their farm. I could see that they were built to last and even our stony land wouldn't wreck them.

"The 4m version I purchased in 2010 was one of the Hybrid models first built and equipped with break-back tines to suit the soils here. Jeff came to set it up and 2019 is our ninth season of using the Claydon, which has been transformational. It has greatly improved timeliness of establishment, significantly reduced the number of man and tractor hours involved, requires much less fuel, fewer passes over the land and greatly reduces the cost of producing crops.

"The Claydon System is also much kinder to the worms than any previous establishment methods and to encourage their proliferation we began taking up to 15,000 tonnes of digestate each year from the Girvan distillery's AD plant.

"This is a high rainfall area and belts of heavy rain passing through can make even fertile soil slump and go lifeless. Because we

use the Claydon drill, water does not lie on the surface, even after heavy rain, and it is possible to travel on the land at any time of the year, but that doesn't mean we should. Soil is any farmer's key asset and it takes hundreds, if not thousands, of years to create an inch of topsoil, so looking after it should be everyone's priority.

"To minimise soil compaction and help keep fields level we use a form of controlled traffic farming, but nothing that requires additional investment as it is based around our 4m Claydon drill, 8m rolls and 24m Multidrive sprayer. One of the aims is to limit where trailers run at harvest and how bales are handled, using existing tramlines wherever possible."

### **WORMS COUNT**

Lord David explains that ever since the Claydon System was first used he has noticed increasing numbers of worm casts on the surface of fields, indicating a healthy population. Perhaps because of that he also began noticing that worms were becoming more newsworthy.

"I read somewhere that the average 8" cube of soil contained nine earthworms and that made me wonder how many were in the soils at Morriston Farms. When I saw an article about the forthcoming 2019 World Worm Week I thought that taking part would be worthwhile. I discussed this with my Estate Factor, Chris Savage, who was very keen to participate and took on the task."

Three fields were selected for the World Worm Week Farmland Earthworm Survey. The one which followed winter rye was drilled while the other two had yet to be drilled, so stubble from previous crops of triticale and spring barley remained. Five soil pits, each measuring 8" x 8" x 8", were dug in each field, in a 'W' shape to ensure a representative count. The soil from them was laid on a mat and hand-sifted, the total number of adult and juvenile worms counted and categorised into three types (surface worms, topsoil worms and deep burrowers), then photographs were taken and uploaded to the organisation's website ([www.wormscience.org](http://www.wormscience.org)) for analysis.



**The productivity at Morriston Farms has increased since adopting the Claydon System.**





**In recent years traditional winter wheat and winter barley have been replaced by wholecrop hybrid rye and triticale to supply an anaerobic digester at William Grant & Sons distillery in Girvan.**

Surface earthworms perform carbon cycling and are prey for native birds such as the song thrush.

Topsoil earthworms improve plant growth and soil aggregation, reducing erodibility.

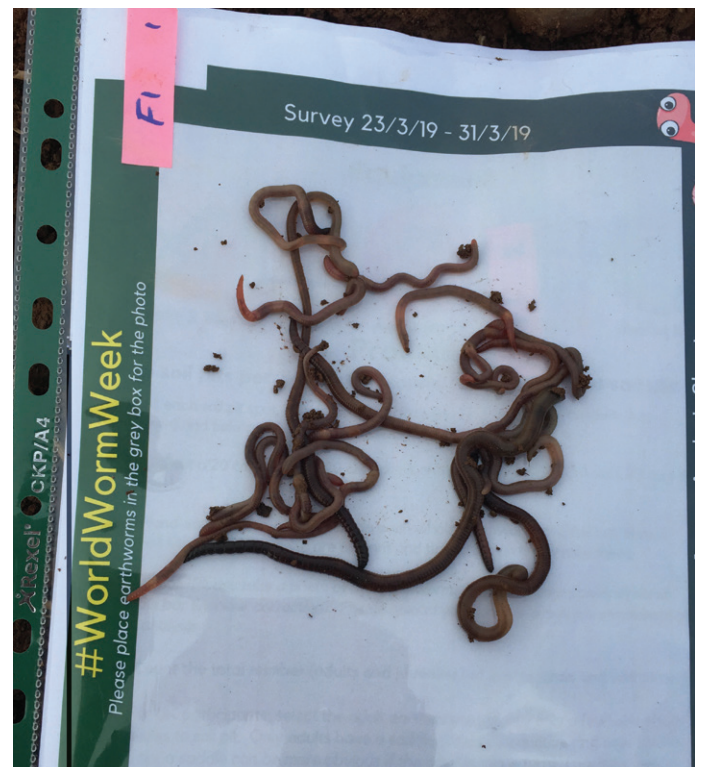
Deep burrowing worms form deep vertical burrows for water infiltration and plant rooting.

"The results were quite remarkable, with each sample containing a minimum of 32 worms, the highest being 55. The exercise laid down a benchmark and is something that we will do regularly in the future,"

Lord David states. "I would encourage anyone using the Claydon System for the first time to do a worm count and then

monitor populations each year to chart the increase. I think that would provide very good data on the benefits of this approach.

"There are fields here that have not been ploughed for 20 years and produce phenomenal results, proving the benefits of direct strip seeding and creating the right conditions for earthworms to thrive."



**The average 8" cube of soil contains nine earthworms. Lord David's survey for World Worm Week contained a minimum of 32 worms, the highest being 55, one of the many benefits of the Claydon System.**