



RICARDO
Member of WSP

NATURAL ENGLAND

Case study – Farm

Purpose and overview

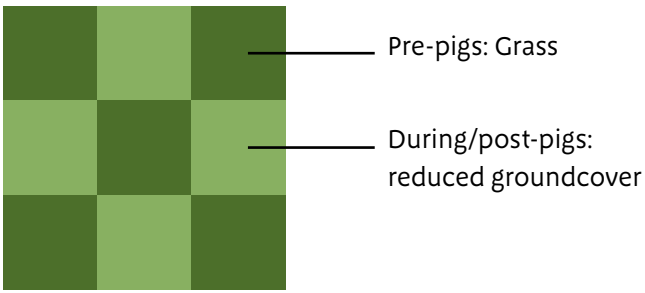
This case study documents the approach taken by an experienced outdoor pig producer in East Anglia to integrate pig production into an arable system while minimising environmental impacts and maintaining commercial viability. The case study is based on an interview with the farmer, who outlines his approach to managing the farm’s production system, site selection process, environmental risks and mitigation measures, and reflects on the benefits and challenges of adopting practices such as chessboard grazing, extensive groundcover management, and integration with agri-environment schemes. The aim is to share practical insights and lessons that may inform and support other outdoor pig producers and advisers working to improve environmental outcomes.

Farm overview

- Two sites in East Anglia, both farms on sandy loam soil.
- Number of pigs: Farm 1, ~3,600 across 34 ha; Farm 2, ~3,800 across 37 ha.

once weaned and remain outside until they are finished at 21-22 weeks old.

The farm runs four six-month finishing cycles across the two-year window in which pigs occupy a selected field, with only half the paddocks occupied at once.



The wider farm

The farm has an ongoing muck-for-straw agreement. The pigs are integrated into the arable rotation as a ‘break crop’ and supply ~4,000t of farmyard manure per year, helping to increase soil nitrogen. Farmyard manure is kept in temporary field heaps, tested for N content and spread on arable fields when required.

Production system

A ‘Chessboard grazing’ system is used which divides fields into 1 ha paddocks, and pigs are moved once the ground cover is reduced. This gives the ground time to recover.

The arable operation provides 1,800 round straw bales for bedding and housing. Outdoor pig production will cease in the current field in summer 2025, which will then be returned to arable production.

All paddocks have groundcover established before the pigs move in.

Agri-environment

The pigs are born in a local breeding unit and moved to the paddocks at around 4 weeks of age

Flower-rich grass margins, blocks or in-field strips are scattered throughout and around the chessboard grazing system to provide habitat.

Site Selection

How do you choose sites for the pigs?

We work with the arable enterprise farm manager who shortlists fields acceptable for outdoor pig production considering soil type, in many cases a sandy loam is chosen. Fields are then designated considering where outdoor pig farming is best suited in the arable rotation with a detailed field by field risk assessment completed.



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What does the risk assessment include?

Key suitability factors

Landscape position is key in outdoor pig farming with factors such as elevation, slope, aspect, proximity to field boundaries, access routes for farm vehicles, and the presence of public roads and footpaths being considered. Soil testing is instrumental too, fields low in soil nitrogen are preferred because soil nitrogen is increased through outdoor pig farming.

Problem sources, pathways and receptors

Source/pathway/receptor analysis is required to minimise potential pollution risks. Surface water natural flows and potential drainage issues as well as Drinking Water Safeguard Zones and Source Protection Zones are noted. Farmers can check if they are located within these zones on the [Environment Agency interactive map](#).

Key management considerations

The designated fields are acquired immediately after harvest which is approximately six months before infrastructure will be erected to accommodate the pigs. A further meeting is held to plan the field layout such as access tracks and location of paddocks to ensure compliance with the Farming Rules for Water.

Remedial tillage is undertaken, if required, to improve infiltration. A grass ley is drilled across the entire field and left to establish, with some agri-environment pockets also drilled. Grass is selected based on its hard-wearing nature and ability to maintain consistent ground cover in paddocks and heavily used access tracks.



Environmental challenges and mitigation measures

What are some of the key environmental challenges in outdoor pig farming?

Water runoff can be an issue in the sector. Particularly on farms where pigs occupy whole fields and quickly eliminate ground cover, leading to runoff issues. [Catchment Sensitive Farming's advisers](#) can help farmers identify runoff pathways and potential ponding locations using the '[ALERT](#)' mapping tool, and plan fields accordingly.

Have you seen any of these on your farm?

The farm has experienced some recent issues with runoff, but we always plan ahead and try to address issues immediately. The environmental risks are relatively low as the pigs are not located near any sensitive sites. Farmers can establish whether they are located near sensitive sites via [DEFRA's MAGIC maps platform](#), under the 'designations' layer.

What has the site done to address any environmental issues?

The arable side of the business is using direct drilling and min-till, this has helped to improve drainage and reduce runoff. Other measures implemented on the farm include:



Fields are rented six months before introducing the pigs and hard-wearing grass is sown. Having ground cover before the pigs are introduced helps to reduce runoff. For prevention of weeds, patches of grass where the pigs are not grazed are cut to remove seed heads.



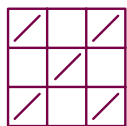
A pre-site risk assessment is done to select sites for the pigs, factoring in the need for things like silt traps to capture excess nutrient runoff. The assessment deemed silt traps were not required in the current field.



To prevent issues with wind erosion, the fields with the pigs in (and other fields around the farm) have **grass strips and flower-rich margins** as part of a Countryside Stewardship scheme.



The **pigs are fed a diet which matches their growth and development** – this limits how much nitrogen is released as waste which could go on to create environmental issues (runoff to water and GHG emissions).



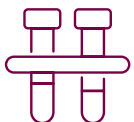
Chessboard grazing is used in the paddocks to maintain ground cover. This involves splitting the paddock into smaller squares and alternating where the pigs are kept. Because of the regular rotation, the field eventually looks like a chessboard – with alternating patches of green (with ground cover) and brown (pigs living on/recently moved off).



Figure 1. Chessboard grazing from above (left), and chessboard grazing on the ground (right) showing where pigs have recently been moved off, in-field grass strip and field with groundcover.



Muck-for-straw arrangement is done between the pig and arable operations. Muck from the pigs is stored in a temporary field heap – the heap is left relatively untouched which helps to limit ammonia emissions, fuel and labour costs.



We undergo annual auditing which involves **testing for faecal indicator organisms** in drinking water, and no issues have been experienced so far.



Feeders are moved semi-regularly.

What made you decide to act?

Without land I don't have any business, so I need to make sure I look after the land. The aim is to make the business viable in the long-term.

Did you receive any support to make the changes?

We are members of the National Pig Association (NPA) so receive updates on important issues through their newsletter. The NPA also host knowledge exchange events in the area which we try to attend.

We previously received funding under the Farming Equipment and Technology Fund which helped to fund plastic huts for housing, however, compared to other livestock sectors, funding streams for pig production are limited.

What are the benefits you've seen from addressing environmental issues?

We've worked hard to reduce the environmental impacts of our operations and have noticed a difference, however, it's difficult to quantify the impacts to air, water and soil.

One of the main benefits is improved animal welfare. We previously produced finishers indoors but shifted to outdoor production with a chessboard grazing system to improve animal welfare. Pigs are easily stressed, and the impact of the stress can sometimes not be seen until 10 days later. We aim to recognise when a stress event is imminent and act accordingly, for example, to help with a cold spell in an outdoor unit, we added a straw bale and extra cover to try and keep the heat in and protect the pigs from the cold wind (Figure 2).



Figure 2. Outdoor unit with a straw bale and extra cover to help with cold weather.

Other benefits we've seen include:

- **Benefits to biodiversity**, min-till in the arable operations means fewer seagulls, increased worm count and improved soil health. We also have curlews enjoying the areas once the pigs have moved in and partridges in the grass strips.
- **Reduced odour**, and minimal odour complaints from a nearby village.
- **Reduced water logging, run-off and soil compaction on site**. We require year-round access to the fields and we have field tracks which are barely rutted, even in the winter (Figure 3).



Figure 3. In-field track with minimal rutting, even in the winter.

What are some of the challenges from implementing measures to address environmental issues?

Increased costs are a key challenge.

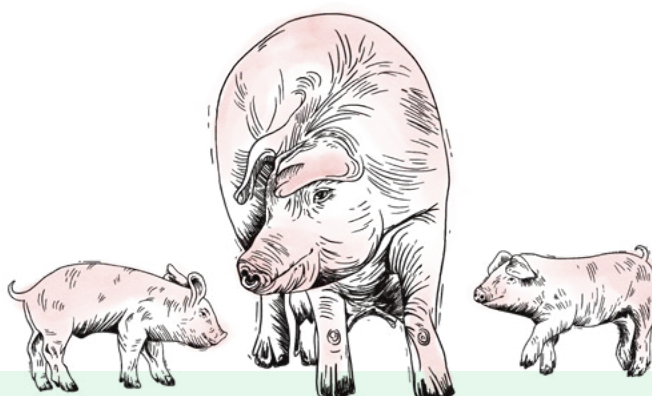
Challenges with establishing groundcover

The fields are taken on immediately after the arable harvest and six months before the pigs are moved in to establish groundcover, so the field is not providing any returns during this time. Establishing groundcover involves costs for purchasing grass seed and direct drilling. We've also had some trial and error to find the best seed mix for groundcover.

It's important that the fields are fit for arable production after the pigs, so there is work to tidy up, but maintaining groundcover helps to protect the land and this also helps to maintain the positive relationship between us and the landowner.

Challenges with chessboard grazing

This method helps to maintain more groundcover, helping to prevent environmental issues, but it does involve more work. Moving between paddocks can be a logistical challenge as housing must be disassembled and rebuilt in a short timeframe which is labour heavy, and in addition moving feeders and water troughs.



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Any key takeaway messages for other pig farmers?

We want the pig industry to have a positive public perception and not a negative stigma. Outdoor pig farming helps pigs to exhibit natural behaviours in a free-range environment.

It's important to be willing to learn along the way, this might involve some trial and error. Learning from other pig farmers is important and we hope to pass on some knowledge through this case study.