Pastured Pigs

This document has been produced as part of a collaborative project between The Landworkers Alliance, Pasture for Life, Hodmedods and Sustain on Deforestation-Free Pigs and Poultry.

Check out Pasture for Life's **Eventbrite** *page to keep up to date with further educational farm walks highlighting farmers who are reducing their reliance on soya-based feeds.*

Introduction

Soya is a valuable feed source for livestock; it is an excellent source of energy and protein, highly digestible, and has high amounts of the limiting amino acids required for an animal's growth. In the UK, the poultry sector is the biggest consumer of soya, followed by the pork sector. Over the past 50 years, production of soy has increased faster than any other crop, with about 77% of global soya being used as animal feed. Half of the world´s soya comes from either the Amazon or other high biodiversity regions. WWF estimated that the land required to grow soya overseas to satisfy the UK's average annual demand between 2016- 18 was an area nearly the size of Wales. Meanwhile, the industry's dependence on imported soya means that volatility of feed prices places farmers in a precarious position.

Across the UK, many farmers are working to reduce their dependence on soya. Finding alternative sources of feed that meet the energy, protein, and amino acid requirements of animals can be challenging without soya, and the farmers in these case studies are using different approaches to providing a balanced diet for their stock. This document is intended for farmers looking to reduce their reliance on soya in pig systems, or as a jumping off point for those hoping to establish a new pastured pig operation. As can be seen from our diverse case studies, there is no singular approach to pastured pig management, and all four farms are continually making adjustments to improve their systems, whether by trialling new feed sources, altering their grazing rotations, or experimenting with different breeding.

If you are thinking about setting up or expanding a pastured pig enterprise this document will help highlight some of the things you will need to think about. It poses questions for you to consider rather than give specific blueprints for how to do it (because invariably every farm and farmer is different, and working within a different context). It is not an exhaustive list so keep an open mind and be prepared to gather information and knowledge from a variety of sources.

What are “Pastured Pigs”?

A pig enterprise which generally moves around on pasture, sometimes integrated or “stacked” alongside other grazing livestock to mimic the role of wild boar in nature where their rooting and disruption of the soil surface can break up dense vegetation, allowing germination of new seedlings. This is in addition to “free-range” or just “organic” where the enterprise might be partially, or fully static.

Why do it?

It is important to know why you are wanting to start or extensify a pig enterprise as this will help underpin many decisions and keep you motivated through the challenges that come up. It could be:

- To create an additional source of income on the farm
- To play a role in your wider farm system, whether forestry, arable, horticultural, or pasture-based
- To use some of your farm’s existing resources and people to spread overhead costs
- To make use of waste, such as crop residues or surplus milk/whey

Where to start?

There is a lot to learn so if you are a complete novice it may be worth starting small so that you can learn from small/cheap mistakes rather than big/costly ones, and, importantly, allow time to develop your markets (which is rarely a quick process – organic growth is generally more sustainable long term).

What is your market?

The size of your market and customer base may define, and have a strong influence on, your scale of enterprise. Who will you sell to? Will you sell direct to local customers, and / or to a wholesaler?
What is the size of this market? How much are they prepared to buy and spend?
What is the route to your chosen market?
How will you get your products to your customers? Local butchers? Farm Shop? The retail trade? Couriered in insulated/protected packaging?
What processing will be required and if so what infrastructure already exists locally, or will be needed? E.g. Local abattoir – how far away are they, what do they charge and how will you arrange transport? Will the abattoir return the pigs skin on if desired? How much does it cost to break them down according to your specifications?

Any packaging and labelling will need to take account of labelling legislation, e.g. organic certification requirements,, advice on storage, BBE dates, etc.

Existing Terminology

ORGANIC

Associated with higher welfare. In the UK organic pigs are outdoor reared (with access to straw bedded huts or tents and large paddocks). Sows and boars are kept in outdoor systems throughout life. Standards include Soil Association, OF&G, and BDA.

FREE-RANGE

There is currently no legal definition of 'free-range pork' in the UK.

OUTDOOR REARED

'Outdoor reared' means the pigs are born and then reared in outdoor systems for around half their lives. During this time they may not necessarily have access to pasture, but will have access to an outside pen and a straw bedded tent or ark. The sows remain in the outdoor system throughout their life.

OUTDOOR BRED

As the name suggests, "Outdoor bred" means that the pigs are born in outdoor systems, usually in straw bedded arks with access to a paddock. The piglets are then brought inside shortly after weaning and spend the rest of their lives indoors. As with outdoor reared, the sows do get to live their lives outdoors.

Source: Compassion in World Farming

What will you feed your pigs?

Like poultry, pigs are monogastric, opportunistic omnivores. Whilst a 100% pasture-based diet is the natural diet for ruminants such as cattle and sheep, pigs in farmed systems are unable to forage freely to counteract gaps in their diets, and because of the greater specificity in their nutritional requirements there is a correspondingly greater risk of negative health and welfare outcomes from inappropriate diets. Because the commercial rearing of pigs on a forage/pasture-based system is relatively new in the UK, and not yet widely researched, there is a risk of low-welfare outcomes through inadequate nutrition.

That said, pigs are resilient animals, particularly when compared with poultry and there is a wide range of accessible sources of nutrition for pigs. Conventional feeds usually consist of compound feeds, grains and meal, or by-products from other processes, all of which have various associated tradeoffs whether that be in terms of nutritional availability, cost, or ecological footprint.

Pigs who are fed a diet restricted in protein are incentivised to forage to compensate for the deficit, which can encourage them to feed from novel food sources on the range - however, care must be taken to ensure that pigs are not overly competitive for feed resources or undernourished, and keeping such systems mobile is important to ensure that forage is continually accessible.

While there are some cases where pigs are successfully reared with no external inputs but naturally occurring forages, these systems are usually many times more extensive, and lower-stocked than the average farm business. That said, there are several possibilities for reducing the level of bought in feeds.

Roughage

The potential of forage and roughage to meet the nutritional requirements of a group of pigs varies according to their life stage and reproductive status. It has been estimated that forage can adequately account for up to 50% of the maintenance diet for dry sows, but less for growing pigs for example. Many farmers feed silage to their pigs, which has welfare benefits in that a) the bulkier food provides greater 'gut fill' than a small amount of nutritionally dense feed, and b) rooting through the bale keeps pigs occupied and is enriching. A potential trade off is that as a bulkier feed it may take more energy to digest.

A Soil Association food lab on the impact of feeding silage to growing pigs concluded that there was no significant impact on weight gain and no impact on taste, and that farmers were able to greatly reduce their use of soya-based feeds (link in resources below).

It should be remembered that as with ruminants, pigs consuming fresh forage as part of their diet will need to consume more than if it were dried, due to a lower DM weight.

Cereal based feeds

Some feedmills supply ready made soya-free compound feed, though the cost is frequently higher than conventional feeds; if you plan to feed your pigs predominantly on standing forage such as brassica crops or herbal leys however, the price difference may be less of an issue. Speak to your local feed mill and to determine price and availability.

If you already have arable infrastructure or can work with someone who has capacity and equipment, you may decide to start growing your own cereals for pig feed, though finding a combination which provides the right balance of amino acids, protein, and energy can be tricky if you are new to pigs. Typically, it is recommended that pulses do not comprise more than 15% of your pig ration due to their anti nutritional properties, though some farmers have been pushing that upper limit.

The price of feed has increased significantly in recent years and remains volatile. Whether or not you grow your own, allow contingency for feed price increases in your business plan.

For smaller scale enterprises whereby quantities of feed demand are lower, some feed companies will only supply a minimum tonnage at one time, and usually prefer bulk delivery as opposed to 15 or 20kg sacks. Consider how you will feed practically and weigh up the costs of bulk delivery vs pre-bagged.

- Helen Wade of East Leach Downs Organic Farms grows her own pig feed, and is trialling lupins as an alternative to soya in her milled feeds

- While much of her pigs diet comes from standing forage, Amy Chapple sources her soya free ration from grains sourced within 10 miles of the farm

Pasture

Some farmers, such as Fred Price at Gothelney Farm, rotationally graze pigs through herbal leys, or on permanent pasture. When leys or pastures are lush and well-established pigs will happily graze, although may revert to rooting when forage availability decreases. Soil and weather conditions and moving pigs regularly is key to minimising destruction.

Grass and clover mixes can provide dry sows with 40-65% of energy requirements and 50-60% of maintenance requirements or 100% of the lysine and methionine requirements of pregnant sows. Pasture herbs such as chicory, fat hen, plantain, dandelion, and birdsfoot trefoil have a diverse range of nutrients, and are palatable to all grazing animals which can be helpful if you have other livestock on the farm.

- At Paddock Farm, Nick and John Francis run dry sows during the summer months on a herbal ley electric fenced paddock system where they are moved every 48 hours. Doing so has allowed them to reduce their compound feed intake from 2.25kg/pig/day down to 1 kg/pig/day

- Fred Price at Gothelney Farm

Food Waste

Due to the 2001 Foot and Mouth outbreak in the UK, it is currently illegal to feed food waste that has been through a kitchen to pigs or poultry. Arable or horticultural waste and residues are acceptable however. While probably not a nutritionally balanced diet on their own, when regularly varied and used to supplement a more balanced core diet, crop waste can be a valuable way to cut down on costs and reduce your reliance on soya.

If you have a dairy enterprise, fresh whey or waste milk can be a valuable protein source for pigs, as can fruit pomace from cider making, or distillery waste. Leftover orchard fruit are also a welcome supplement; these can either be brought to your pigs, or pigs can be run through orchards after harvest to clean up the aftermath (although care must be taken that they do not damage your trees).

- Simon Cutter of Model Farm supplements his pigs feed on a high proportion of arable waste and residue sourced from local farmers who deliver for free. These vary from potatoes, to pumpkins, jerusalem artichokes, and even bananas. These preclude him from certifying his pigs as organic however, so if you plan to pursue organic accreditation this option may not be open to you unless you have organic arable and horticultural farms nearby who you can develop relationships with

Insects

Under current legislation the feeding of black soldier fly larvae is legal, but costs exceed those for other protein sources and the infrastructure is still in its nascency. There are many projects and start-ups in this space, and it's worth looking into them and keeping an eye as the industry develops and prices lower.

Crops

Grazing pigs through crops (whether planted as forage or using them to clean up residues) is common practice in many systems, and they can be an excellent feed source. In terms of energy requirements, one study suggests root crops such as Jerusalem artichokes or sugar beet can successfully provide up to 50% of a growing pig's energy requirements, and 80% of a pregnant sow's. In terms of amino acids, suitable forage can provide the entirety of a pregnant sow's amino acid requirements, but only 30-40% of a growing pig's. Protein rich foraging crops can meet full requirements for amino acids in pregnant sows, and 30-40% for growing pigs.

Seasonal variability

As with all extensively reared livestock, the nutritional requirements of pigs vary across the seasons, particularly in cold weather, where feed rates may need to be increased in order to maintain weight and temperature (which may justify a bulkier, less nutrient-dense diet over these periods) In terms of green forage availability, some feed sources will only be available for part of the year, while those sources that are available year round may have different palatability and nutritional value across the seasons. Pig farmers opting to grow some or much of their own feed may be inclined to grow a range of different forage plans to account for this variability.

RESOURCES:

This document from Agricology lists a range of forage crop/pasture options and their relative pros and cons when grazing pigs:
https://agricology.co.uk/sites/default/files/ICOPP_Technical_Note_4.pdf

While this document lists a range of sources for concentrate feed
https://agricology.co.uk/sites/default/files/ICOPP_Technical_Note_3.pdf

Soil Association Feed Labs on Feeding Silage to Pigs
https://www.soilassociation.org/our-work-in-scotland/scotland-farming-programmes/field-labs/feeding-silage-to-pigs/

Report on 100% organic and regionally produced feed sources for monogastrics
https://ok-net-ecofeed.eu/wp-content/uploads/2021/08/OK_Net_EcoFeed_knowlegdesynthesis.pdf

2 https://agricology.co.uk/sites/default/files/ICOPP_Technical_Note_3.pdf

Which breed to choose?

As with ruminants, certain breeds of pig are more well suited to extensive, forage-based systems, with heritage breeds reported to be more active foragers, and able to more effectively convert what might, in a commercial system, be considered low-quality feed. When using native breeds you should take conventional feed guides with a pinch of salt, as they are almost always developed for more commercial systems and fast-growing breeds of pig.

RESOURCES:

British Pig Association - Buyers guide:
https://www.britishpigs.org.uk/buyers-guides

Rare Breeds Survival Trust:
https://www.rbst.org.uk/pages/category/pigs-watchlist?Take=11

Where to source your stock?

If starting out with pigs, it may be sensible to purchase weaners to rear rather than getting set up for breeding; if purchased in spring, a few weaners can be fattened before winter, allowing you to work out the kinks in your system without having to overwinter sows or dive straight into breeding. Depending on the size of your operation, it may be more economical to buy in weaners from a trusted breeder annually, rather than house and feed breeding sows and boars, but the exact finances will vary on a case by case basis.

- Breed / genetics that will suit your system
- Relevant certifications, e.g. organic, health assurances
- Reputation of supplier (for health and welfare especially)
- Rearing system
- Cost – shop around to get a feel for what is reasonable

Housing

There are any number of housing options so it is important to first think about your specific housing requirements, and how these might change during the year. Most pigs will happily occupy the ready made pig arcs available online and through agricultural retailers, but there are also many examples of low-cost DIY versions online.

Some key factors to consider are:

- System - growing pigs will have different requirements to lactating sows
- Capacity – how many pigs will you need to house?
- Wheels or skids? And how will you move housing – tractor, pick-up, quad bike?
- External dimensions – will you have to squeeze through narrow gateways? How can you ensure stability during high winds?

- Materials – what longevity do you need? What is your budget? Environmental impact of materials being used, and later disposed of? If you are building your own, where do your skills lie – metalwork, woodwork? What will be best for keeping clean and disease free? What weight of unit can you withstand – thinking especially about winter conditions when ground is softer?
- Food and water provision – How will you provision your pigs with a constant supply of clean drinking water? Some farmers prefer automatic calf drinkers as pigs have a tendency to tip over troughs to create wallows if allowed. How will you minimise competition for feed space? How will store feed so that it is protected from the elements and rodents?

Range

Pigs are natural rooters, and although there is some anecdotal evidence that suggests modern commercial breeds may be less active forages than traditional breeds, within the traditional breeds most variability is more likely to stem from differences in upbringing, availability of forage, and local environmental conditions. As such it should be anticipated that all pigs will root opportunistically, should conditions allow. Attempting to prevent this behaviour is likely to lead to frustration on both your part and the pigs, and as it is a form of enrichment for them it is better to think of how you can target or redirect their energies. Pigs are expected to root more intensively if their diet is deficient in crude protein, as they seek out other sources.

While some freedom to root is desirable, allowing pigs to convert mature vegetation to the "moonscapes" often associated with outdoor pig farms may be counterintuitive if your aim is to produce good soil and sward structure. It can also hamper your ability to integrate pigs into rotation with arable enterprises or other livestock as these areas can take a long time to recover. Ideally, pig rooting would be integrated into the wider farm management (for example as part of a horticultural or arable rotation) or mitigated through management (e.g. moving groups frequently and providing plenty of high-quality standing forage to promote grazing rather than rooting). A further consideration is the relative feasibility of keeping pigs outdoors in summer, versus winter, when the ground is more vulnerable to disturbance.

Although some people keep their pigs on completely separate rotations from other enterprises, it is worth examining how pigs could contribute to your wider farm system, for example, serving to fertilise and consume crop residues pre/post harvest. Pigs can also be used opportunistically, for example if you need to open up dense vegetation for tree planting, or would like to experiment with having them prepare the ground for sowing a herbal ley.

As with any grazing rotation, it is worth writing a land management plan for your pigs, including for the remediation of pasture or arable fields after pigs have moved through it, and contingency plans for prolonged wet weather.

Note:

Pigs need shade and shelter in hot or inclement weather; this is particularly important given that pigs cannot sweat to regulate their temperature. If you are able, providing a wallowing area of mud is something they will definitely appreciate; they may try to tip over water troughs to create a wallow if one is not provided, or climb into water troughs! Regardless of whether they have access to a wallow, make sure that pigs have access to clean drinking water at all times.

Winter housing

Unless you are on very light soils you may need some wet weather housing for your pigs - even if it is only used in emergencies rather than by default. If housing indoors, a deep substrate is important for welfare, allowing pigs to root. Different groups may have different outwintering situations, as seen in the below examples:

- At Red Woods Farm, Amy Chapple runs her dry sows and boars through woodland over winter, and tries to outwinter the other pigs as much as possible, but has the option to bring them inside to preserve the fields. During the winter when her cattle are housed, she distributes corn and grains in through the bedding - if and when her pigs are housed in these sheds they are incentivised to root through the muck, aerating it and providing them with plenty of enrichment

- Nick and Jon Francis of Paddock Farm overwinter their growers in straw littered barns with outside access, while their sows live outdoors in a deep woodchip corral to protect the ground from impact

- Helen Wade outwinters her pigs on their light cotswold brash, but gives the pigs more space to reduce animal impact on any given area

Fencing

Fencing is one of the most crucial elements of a pig enterprise - pigs are strong, tenacious, and tough, and have been known to wriggle under woven wire fencing, destroy gates, or short out electric fencing by turning turf over onto the polywire. That said, many people find that a simple one or two strand electric fencing with a good current is perfectly sufficient for pigs who are trained to it.

Your fencing needs will be dictated by the scale of your operation and how often you intend to move it. Semi-permanent electrified plain wire strands or polywire with plastic or semi-permanent wooden fence posts are typical. Ensure you have a powerful energiser. If you are in proximity to a mains electric supply this can be most reliable, otherwise a good sized portable solar charged unit could be a good solution.

How often to move?

There are many factors that may dictate the answer to this, such as:

- Availability of natural forage within the range
- Build up of manure
- Practicalities within the farm's work routine – e.g. doing so on the same day each week may help with planning and staff resources
- Organic compliance

Health and wellbeing

Pigs will be at their most productive and resilient when happy and healthy.

Stocking densities that are too high can increase the risk of disease and negatively impact your land, but too low and you may struggle to have a business.

If you have the land, you might consider rotating your pigs over different parts of the farm each year to prevent any build-up of disease in the soil and to allow the pasture to recover fully.

Processing

Check with your nearby abattoirs to compare prices for slaughter and breaking down the carcass. Some abattoirs won't provide pigs with skin on, which can be problematic depending on what your product is. What cuts and joints your pigs will be broken down into depends in large part on your market - it may be best to determine this ahead of time before being stuck with a freezer full of inventory, but don't complicate your life too much by cutting to demand. Carcass balance is less of an issue compared to cattle or sheep as much of it can be turned into sausages.

RESOURCES:

The below resources are available online and contain useful background information on this topic:

Newcastle Handbook of Raw Materials https://organic-farmknowledge.org/tool/38590
A comprehensive (if not recent) handbook explaining some fundamentals of pig nutrition and the pros/cons of a range of potential feed sources.

Knowledge synthesis of feed production
https://ok-net-ecofeed.eu/wp-content/uploads/2021/08/OK_Net_EcoFeed_knowlegdesynthesis.pdf
Extensive literature review of existing research into organic feed sources for pigs and poultry.

Fulfilling 100% Organic Pig Diets: Feeding Roughage & Foraging from the Range
https://www.agricology.co.uk/sites/default/files/ICOPP_Technical_Note_4.pdf
A summary document from the Organic Research Centre outlining forage and roughage feed sources in organic systems.

Fulfilling 100% Organic Pig Diets: Concentrates
https://www.agricology.co.uk/sites/default/files/ICOPP_Technical_Note_3.pdf
A summary from the Organic Research Centre outlining various options for organic concentrate feed sources.

Rare Breed Briefing - Using Pigs in Conservation Grazing
https://www.rbst.org.uk/blog/rare-breed-briefing-using-pigs-in-conservation-grazing
Pastured Pig WhatsApp group: Please contact info@pastureforlife.org to be added to an informal whatsapp group for those wanting to share knowledge and experience on this topic.