

Organic Pig Production In Great Britain

Organic pig production has doubled in each year since 1997 with over 20,000 finished pigs being produced in 1999, with a farm gate value of almost £3 million. This rapid rate of growth may not be sustained. A study was completed in 1999 to identify the key characteristics of the GB organic pig herd. All registered organic pig producers were contacted and a detailed report of the results will be included in the final report of the study.

Only 2.5% of all registered organic producers have pigs, so for the right organic farmers the potential for a pig enterprise should be considered. High management standards, good stockpeople and light free-draining soil type are essential. Soil Association Certification Ltd, Organic Farmers & Growers Ltd and Scottish Organic Producers Association all certify pig producers in the UK, with the majority being SACert registered.

In 1999, there were 1181 organically managed sows on 36 organic farms producing almost 21,000 finished pigs; data for 2000 are being compiled. One-fifth of producers have the majority of sows in herd sizes of over 51.

Averaging 17 weaners finished per sow in 1999, the range was high - accounted for by the diversity of breed, age and production system. Further research is in progress to benchmark the UK organic pig herd and to identify the extent and cause of production differences between herds.

Feeding Organic Pigs

In the feeding of pigs, the main objective is to produce piglets from breeding animals, and subsequently meat from those piglets, with the maximum efficiency and profitability. Since feed accounts for 70-80% of the cost of pigmeat production, the correct formulation and rationing of feed is critical to this process. In conventional production, there has been a great deal of research into the nutrient requirements of pigs and the feeding value of the commonly available raw materials, and diet formulation and feeding strategies have become extremely sophisticated.

In organic pig production, considerations other than simple economic efficiency of production come into play. Organic farming requires an integrated, whole-farm approach to food production which takes due account of sustainability, environmental and animal welfare considerations. Thus, whilst much of the knowledge gained from conventional pig production can be applied in the organic context, the feeding of organic pigs will differ from that of conventional pigs in a

Breeds and systems

A total of 13 different breeds (and several crosses) were used. These included: Saddleback (including Duroc cross); Large White; Hampen; PIC Camborough 12; Duroc (including Landrace, Large White crosses). The PIC Camborough 12 accounts for one-third of the GB organic sow herd:

The smaller farms hold a wider range of breeds, including Tamworth, Gloucester Old Spot, Oxford, Large Black, Welsh, Hampshire, Oxford Sandy & Black, and Berkshire.

Of the other organic enterprises on the organic pig farms, almost three-quarters also operated a beef or sheep enterprise, whilst only half included arable and one-third poultry production. The most diverse operations (with four or more enterprises mentioned) tended to be the smallest, whilst dairy production was generally associated with the larger producers.

Markets

The majority (30 of the 36) of producers sold direct, with half of the producers mentioning this as their only outlet. Several direct marketing approaches were used, including farm shops, box schemes, mail order and farmers markets. Direct sales were both as fresh and frozen. The majority of finished pigs went to one of seven wholesale outlets, Eastbrook Farm taking around half of the total production.

number of significant ways. Under organic principles, feed is intended to ensure quality production rather than maximising production. Feedstuffs should be organically produced and certain raw materials are not permitted. All pigs must have access to pasturage or an open-air exercise area or an open-air run and roughage, fresh or dried fodder, or silage must be added to the daily ration for pigs.

A handbook is being produced to assist the organic pig producer in selecting appropriate diets and feeding strategies by summarising the relevant knowledge from conventional pig nutrition, discussing the ways in which organic systems may differ, presenting simple rules for diet formulation and providing information on the nutritional value and feeding characteristics of different raw materials for organic pig diets. Information specifically on organic pig nutrition is still very sparse, but the handbook will provide a grounding for the feeding of pigs of all classes under organic conditions within the UK.

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MAFF RESEARCH PROJECT

OPTIMISING PRODUCTION SYSTEMS FOR ORGANIC PIG PRODUCTION (OF0169)

This three year research programme is funded by MAFF, with contributions from PIC and Tesco. The work is being carried out by ADAS, Eastbrook Farm, Newcastle University and Eco-Stopes Consultancy. Progress is monitored by a Steering Group which meets twice a year to review the work and to ensure that the trial remains relevant to pig farmers. Members of the Group include MAFF, Aberdeen University Centre for Organic Agriculture, PIC, the Soil Association, the National Pig Association, RSPCA and pig farmers.

The research aims to optimise organic pig production systems and covers many aspects of production, including maternal breed types, dry sow management, feeding and housing of growing pigs, meat quality and animal welfare throughout the production cycle. Through contributions from a number

of commercial organic pig farms, management practice and financial aspects of production are also being studied.

The research project is still in its early stages with over 18 months of work still to complete. As a consequence trial results are not yet available for presentation. We had intended to run an Open Day to provide you with an opportunity to hear about the research and the type of information which will become available over the next couple of years. However, the outbreak of Swine Fever meant that we were unable to go ahead as planned. We hope that this newsletter gives you some idea of the work that we're doing, and that we will be able to go ahead with the Open Day planned for next autumn. Watch out also for a one-day conference in Spring 2002!

This Newsletter Covers

Who's who on the Research Team

Eastbrook Farm

Organic pig production survey

Alternative breeds

Dry sow management

Grower trial work

Feedstuffs for Organic pigs

Welfare of organic pigs

Things to look out for over the coming two years - results coming out soon!!!

Special thanks to...

The Research Team would like to express their thanks to all the Focus and Link Farmers and staff who provide information and participate in the trial. Without their enthusiastic support it just wouldn't be possible! Thanks also to all farmers who replied to our questionnaire, and to the staff of Eastbrook Farm Organic Pigs, Ensors and Robert Gordon University for meat sampling.

Alternative Breeds

A key issue in maintaining welfare within the pig herd is choice of breeding stock. In a relatively "hands off" system, the sow's mothering ability becomes crucial to piglet survival. Also, the longer lactation required under organic systems (at least six weeks, preferably eight) places much more demand on the sow than conventional systems would. Thus, in this trial we are comparing a traditional breed of sow, the Saddleback, which is highly regarded for its hardiness and mothering ability, with an "improved" traditional breed, the Saddleback x Duroc sow, with a popular improved conventional sow, the Camborough 12 (Large White x Landrace x Duroc). All of these sows are being served by Duroc boars, with performance and health issues such as body condition changes, being monitored closely.

Who's Who In The Research Team?



Sandra Edwards is Professor of Agriculture at Newcastle University. She has been involved in pig research and extension for 18 years, working on aspects of nutrition housing and management of both indoor and outdoor pigs.

Christopher Stopes is a freelance consultant in organic food and farming. He serves on the UKROFS Board and Chairs the UKROFS Certification Committee. He is also a member of the Soil Association Pig and Poultry Standards Committee.



Anne Martins works for ADAS as a Principal Consultant. Anne provides strategic and business consultancy to the pigmeat sector at both farm and industry level. Anne specialises in the technical and business aspects of organic pig production and manages the MAFF Organic Pig Research project.

Hilary Kelly is a Research Associate of Newcastle University and is responsible for the management of trial work on the Organic Pig project



Helen Browning, OBE, runs Eastbrook Farm and is director of Eastbrook Farms Organic Meats. She is Chairman of the Soil Association and a Meat and Livestock Commissioner.

Dr Jon Day has published widely in the fields of behavioural nutrition and welfare of farm animals. He is employed as a Research Scientist at the ADAS Pig Research Unit where he leads the behaviour and welfare research programme.

Eastbrook Farm

The majority of the research work is being carried out at Eastbrook Farm. The farm comprises 540 hectares (1337 acres) of Wiltshire downland, rented from the Church Commissioners. Helen Browning began the process of converting to organic farming in 1986 after taking over the tenancy from her father.

The pig herd consists of 80 commercial Saddleback and Saddleback x Duroc sows, with an additional 60 sows comprising the trial herd (see below). The commercial sows are served by Duroc boars, with progeny reared outside to bacon weight, coming inside only for the last couple of weeks to allow sorting, and feeding of high forage diets to improve carcass grading. Homeopathic remedies and nosodes are used to treat health problems as necessary, with antibiotic use being very rare.

The pigs are an integral part of the farm's rotation. They go onto a second-year grass-clover ley, and may be followed by (for example), two winter cereal crops and

vegetables. The five-year rotation allows a sufficient gap before the pigs reuse any piece of land, so that the significant disease and parasite cycles should be broken. As well as the pigs, there are two dairy herds, comprising 250 cows and followers, beef and organic "pink" veal production, a flock of North Country mules as well as a small flock of Hebrideans, whose meat is highly prized, about 27 hectares (65 acres) of vegetables (potatoes and carrots), and 230 hectares (570 acres) of cereals and set-aside.

All the finished livestock are sold through Eastbrook Farms Organic Meats, and its recently-launched joint venture with BQP, Eastbrook Farms Organic Pigs (EFOP). Branded products are sold through multiple retailers as well as a home delivery service. EFOP are keen to work with other farmers, to encourage them through the conversion process and provide stable, fixed price sales contracts.

Dry Sow Management

Organic standards require that animals are able to satisfy their behavioural needs as far as possible. Nose ringing is widely used in conventional outdoor systems as a method of preventing sows destroying pasture by rooting, but is forbidden by some organic sector bodies. If a green cover can be maintained on the paddocks, this not only provides a better surface for the stock, and provides more behavioural substrate, but also retains excreted nitrogen better, limiting run off, and making more nutrients available to the following arable crop.

These factors considered together have led to the development of a "wave" pattern of pig rotation, at Eastbrook Farm. Some other farmers currently use a set stocked system where the pigs remain in a given area for a whole year. Under the wave system, the sows always farrow on clean ground (~8-10 weeks land occupancy), the growers always go out onto a clean patch of ground (~4 months occupancy), and dry sows and boars are moved on after about 4 months occupancy. Pigs are fully integrated within the farm's rotation policy and frequent moves allow the animals access to fresh pasture once the previous green cover has been removed, while limiting the build up of disease problems such as parasites.

In the trial, we are comparing one paddock which moves on three times in the year, with a larger paddock that

stays in place for a whole year. The total land available to the pigs is the same over the year, but in the "Set stocked" system, they have access to the whole area all the time, whereas in the "Rotational" system they have access to only one-third of the total area at any point in time.

Grass cover throughout the period of occupancy is assessed using a quadrat system. The pigs' behaviour is recorded at different times throughout gestation. This records the location of the pigs within the paddock (i.e. how much of the available space they are using), and also their activity, for example rooting, or non-destructive foraging. Patterns of excretory behaviour are also important for nitrogen deposition. Aggression is important for establishing and maintaining the social order, but unresolved conflict is detrimental to welfare and performance, thus all incidents of aggression are described in detail. This behaviour recording is carried out for all three breeds of pig, in the two different paddock types, over three parities.

Faecal samples are analysed for common gut parasites of pigs, including *Ascaris suis*, the cause of milkspot in the liver. Samples are taken from the sows in the different paddock systems, and also from their progeny.

Grower Breed-Feed-Housing Trial

Self-sufficiency or use of local produce is an aim of organic farming. Pigs, as omnivores, can utilise many feedstuffs and in the conventional sector a number of co-products are successfully used in this way. There is however relatively little information on feeding readily-available homegrown feeds such as silage.

Using bulky feeds for pigs may enable a reduction in use of costly, bought-in concentrate feed, in favour of lower cost, home grown feedstuffs. Bulky feeds may also be beneficial to the animal in providing gut fill and increased levels of fibre, for example where the concentrate portion of the feed is restricted to improve carcass grading, and in providing an additional substrate for foraging and other behaviours.

Outdoor housing provides welfare benefits in terms of increased space and a varied environment with opportunity for behavioural freedoms, however, extreme weather in summer and winter which may not be adequately compensated for by the available shelter, can be a cause for concern. Organic standards recommend access to an outside run at the very least, and so these two types of housing are being compared.

Progeny from each of the three breeds of sow are being

allocated to this trial in single-sex groups of six. These pigs are housed either Inside (with an outside run) or Outside (paddock with an arc). They are fed on either standard 80% organic grower concentrate diet or the concentrate diet supplemented with grass-clover silage or fodder beet offered ad libitum. During this time, they are weighed regularly and feed intake is recorded. Half of the groups are to be slaughtered at pork weight, and the other half at bacon weight. As well as collecting the usual carcass information such as cold weight, P2 and lean %, we are taking meat samples for assessment by taste panel. From each of the 18 different treatments (three breeds x three feeds x two housing), we will be assessing eating quality of pork chops, ham, bacon and sausages.

The pigs from this study are also forming part of the wider welfare assessment (see separate section in Newsletter). Pigs from each of the different treatments will be examined at slaughter for lesions to the lungs (pneumonia or other respiratory problems), livers (Ascaris worm infection), heart (thickening of the heart valves as an indicator of stress) and stomach (changes to the stomach lining up to and including ulceration have been related to diet and stress).

Welfare

Against all the background of food scares and the intensification of modern livestock production, consumers have become increasingly sensitive to food related issues and the expansion of the organic sector has gathered momentum. As organic farming is based upon a philosophy, the consumer of organic food products aligns themselves with this philosophy in the belief that their diet will be safe, nutritious and be produced in such a way that safeguards animal welfare and the environment. The question which remains is to what extent animal welfare is safeguarded in organic systems of production?

This project aims to assess organic pig welfare using a well-established framework of evaluation. This framework dictates, to safeguard animal welfare, individuals should be:

1. Free from hunger and thirst
2. Free from discomfort
3. Free from pain, injury and disease
4. Free to express normal patterns of behaviour
5. Free from fear and distress

The assessment of pig welfare in this project will address questions such as: do organic pigs have high levels of intestinal parasites due to the lack of routine anthelmintic treatment; are organic sows disadvantaged by the longer lactation imposed; and are some genotypes/breeds better adapted for organic production than others. Direct observations of pig health and behaviour will be taken and techniques such as on-farm interviews, welfare audits and post-slaughter investigations will be employed.

