Review of the GB Pig Industry Structure

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Contents

Update February 2022

This draft report was dated April 2021. Since then there have been a number of comments on accuracy and suggestions for improvement from a number of government and industry groups and organisations. These have been reviewed and where appropriate have been incorporated into the draft.

Since April 2021 a number of updated statistics and reports have been published but the new information has not been incorporated into the report as it would have necessitated a major change. The updated reports and publications mainly on livestock demographics are noted in the Annex containing the references.

The report has a wide range of recommendations. The current economic state of the industry in February 2022 is extremely poor due to a combination of factors. These include the backlogs of pigs on farm which are having to be slaughtered with disposal and major loss of revenue for the producers. The reduced price for slaughter pigs paid to the producers due in some cases to the increase weight and in others due to lack of facilities. Added to this are increased costs including for feed.

As a consequence, a number of the recommendations are not practical at a time of economic hardship. Some of them will require a detailed impact and economic assessment. Other recommendations which modify systems and improve the collection and handling of data and information could be implemented within existing resources.

Executive summary

1. The Disease Control Orders for England, Scotland and Wales include the requirement for a 20-day standstill for pigs moving off a holding following incoming pigs. The basic premise is that if disease is introduced onto a farm by an infected animal the standstill should be of a sufficient length to allow existence of disease to be recognised by the farmer and reported to the authorities before animals are moved off. There are a number of derogations in the Disease Control (England) Order 2003. Schedule 1 of the Order lists the Movements off premises which are permitted during the 20-day standstill period whist Schedule 2 lists Movements on to premises that do not trigger the 20-day standstill one of which is isolation before the movement.

2. Legislation has also existed for many years to record pig holdings, identify pigs and control movements. The current legislation is contained in the “Pigs (Records, Identification and Movement) Orders 2011 as amended” for England, Wales and Scotland (PRIMO). An amendment to PRIMO included an article detailing the role of the Secretary of State in approving a holding for the purposes of movements of pigs intended for breeding or growing provided the holdings from which and to which the pigs moved were specified. As a result the movement of pigs between holdings approved under this article would not trigger the standstill period in the Disease Control Orders 2003.

3. The GB pig industry has changed considerably since the introduction of the Disease Control Orders and PRIMO legislation. Both pieces of legislation were introduced to prevent the spread of notifiable diseases whilst at the same time providing derogations to enable the industry to operate successfully. With the passage of time changes have occurred not only in the way in which the industry operates but also in the technology which is available for identifying pigs and monitoring and tracking their movements.

4. Currently two derogations of relevance are available for the commercial sector of the pig industry. The derogation in place for pyramids, which comprises breeding and growing pigs, allows movements of pigs within a pyramid which do not trigger the 20-day standstill period. The other important option is allowing holdings to be exempted from the 20-day standstill when incoming breeding pigs are placed in approved isolation before movement to the destination unit. In the past there have been some concerns about compliance with the isolation standards required, to observe biosecurity on the holding and the ability to police and enforce the isolation requirements

5. This review was commissioned by Defra due to concern that the changes in the structure and operation of industry in past decade could impact on the effectiveness of the legislation which might need to be updated to reflect the changes. The twin legislation in the PRIMO and the Disease Control Orders has served the pig industry well. Control on the speed and traceability of pig movements must remain a top priority in the light of the risks posed by ASF and the increasing evidence from modelling that the disease would spread rapidly if introduced into the GB pig herd. There is no doubt that the legislation needs updating to meet the current needs of both government and industry

6. The review aims to provide Defra with details on the structure and operation of the modern GB pig industry as well as assessing the effectiveness of all aspects of the PRIMO legislation. This includes records, identification and movements not only for the commercial sector but also the non-commercial sectors such as small scale producers, hobby famers and pet pig owners.

7. The review is structured around chapters based on the terms of reference and is divided into 11 chapters. The first four chapters set the scene with each of next 5 chapters dealing with a

specific issue linked to the PRIMO legislation. Detailed conclusions and recommendations fall into the following six key areas:-i) Records/registration, ii) Identification, iii) Movements, iv) Pyramids, v) Imports and exports and vi) Electronic Animal Movement Licensing system (eAML2). The final chapter answers five specific questions posed by Defra in the terms of reference.

8. Chapter 2 aims to provide Defra with the background to the modern-day pig industry in GB. It contains information on the present structure of the industry dealing with the basic production cycle and the way this operates in the breeding and commercial sectors. Performance figures are provided to show the scope and extent of commercial production. In addition, the importance of assurance schemes is included as is a description of outdoor production both of which have an impact on a number of the recommendations later in the review.

9. Chapter 3 reviews the possible data sources for information on the size, categories, and distribution of pig holdings in GB. From this a description is given of the numbers, categories and distribution of holdings and pigs in GB. One of the key findings is that no accurate and up to date information on the number and size of pig holdings exists. Current legislation is inadequate as it only stipulates collecting a negligible amount of information about each holding. It was concluded that despite these limitations the pig movements' databases in England and Wales and Scotland currently provides the best coverage of the entire pig population of GB.

10. Recent publications following an analysis of holding size based on movements suggest that 72.1% of the identified holdings were probably pet pig owners or hobby farms and 14.4% were small holdings. It was concluded that there could be 25,000 holdings in these two categories. This may not reflect the true picture due to owners ceasing to keep pigs and not moving pigs in the specified period. This number does not account for pet pigs which are not recorded by the owners and may be increasing due to changing demand. No recommendations are made as the chapter aims to provide only details of herd sizes and distribution and to highlight the deficiencies in the availability of information. The relevant recommendations to improve the situation will be found in the later chapters on record/registration and movement databases.

11. Chapter 4 describes the overall structure of the pig industry and pig keeping including the commercial supply chain and the non-commercial component. The majority of high value pig genetics in GB are supplied by 3 companies with high health status nucleus and multiplier herds. Production of breeding stock is split between indoor and outdoor systems across England and Scotland with a net downward flow of pigs through approved PRIMO pyramid structures. The commercial supply chain has become increasingly integrated over recent years and is made up of 3 fully integrated companies who account for around 28% of the sows. The remainder include a number of larger enterprises with up to 10,000 breeding sows and other middle-sized commercial enterprises some of which are on contract finishing for one of the key integrators. The chapter also describes the non-commercial sector including rare breeds, small holders and pet pigs. In each of the sectors there exist a number of challenges which are specified in the chapter. As part of the supply chain hauliers and abattoirs which respectively have an important role in disease prevention and surveillance are briefly described.

12. The review then moves on to the next 5 chapters which include a detailed analysis of the main components of PRIMO covering records/registration, identification, and various aspects of movements.

13. Chapter 5 deals with records and registration where the accurate recording of the numbers and location of pigs is an essential component of any disease control contingency planning. An accurate overview of the pig holdings in GB is difficult to obtain. The pig owner has to register with

three separate organisations in order to comply with the current legislation. Their details are held in three different databases for English and Welsh owners and further databases for Scotland for Scottish owners. Recording the number of pigs on a holding annually is a requirement of PRIMO and the Red Tractor Assurance scheme but none of this information is provided centrally unlike the sheep industry where numbers have to be recorded in the movement database.

14. The review concluded that the current system of records and registration is not fit for purpose with too many gaps. A number of specific recommendations are made regarding changes to legislation. This would require registration with annual renewal for all pig keepers along with the collection of detailed information annually. Any changes in England should consider the Animal Health and Welfare Pathway and the proposed development of the Livestock Identification Service. There was recognition that ongoing publicity and education to raise awareness of the legal requirements was important especially for the non-commercial sector.

15. Chapter 6 covers identification where there is concern that individual pigs cannot always be traced back to their holding of birth from wherever they are in the supply chain. The traceability of pigs is important for a number of reasons, disease control, food safety, consumer confidence and to assist with management practices. Effective traceability requires the identification of pigs throughout their life cycle. Current legal requirements for identification specify either an ear tag or tattoo apart from pigs less than 1 year moving from farm to farm when a temporary mark is acceptable. As the majority of pigs which move are less than 12 months the only time, they are physically traceable is when they are slap marked before moving for slaughter. A number of alternatives methods of identification exist including electronic ear tags.

16. If the intention is to identify individual pigs back to their holding of birth no matter where they are in the supply chain a method of individual identification will need to be used. Ear tags applied at the holding of birth would be needed to identify the holdings on which pigs have been resident throughout their lives. It would not be practical to apply a tattoo or slap mark each time a pig changes holding. Electronic ear tags could be the best solution as pigs would not need to be handled to read their identity although a number of issues need to be resolved as discussed in chapter 6. Other methods of identification such as the use of DNA identification need to be explored.

17. An industry argument is that batch tracing will suffice as disease will be transmitted in a batch and that records are such that tracing the batch backwards would be adequate and avoid the expense of ear tagging. Providing slap marking is used for pigs moving to slaughter the industry consider the batches can be successfully traced back to all previous holdings. The view of Red Tractor and APHA with respect to disease prevention and control as well as for, effective and robust traceability along with whole chain assurance is that the system could be improved to provide more effective trace back of pigs to holding of birth. A number of recommendations are provided on ways to improve the position but most of these are for the future. The integrated companies are beginning to develop improved tracing systems and should be involved in any developments.

18. Chapter 7 deals with the type and extent of the commercial and non-commercial pig movements in England and as far as possible includes movements into and out of Scotland and Wales. This was in the context of understanding movement practices and the role they may play in the spread of diseases along with the preventative measures which could be taken. It must also be recognised that GB is a single epidemiological unit with common interests and that the maintenance of the integrated supply chains between the three countries is crucial.

19. There are no comprehensive data sources on movements within the pig sector apart from eAML2 and ScotEID. The majority of pigs will move from farm to farm whilst other movements will go directly from the finishing farm to slaughter. There are a mixture of small holdings and hobby farmers who will purchase weaners for fattening, sows for breeding and various other combinations. Pigs originating from medium to small size commercial producers, non-commercial holdings along with hobby farmers will tend to go markets or move locally. When production pigs only go from the holding of birth to the abattoir tracing is straightforward. In the case of larger sized commercial production or the integrated companies pigs often move once or twice from their holding of birth before slaughter.

20. There is concern from the EPIC studies that in a number of cases compliance with the 20-day standstill is unsatisfactory. The review concluded that there can be some confusion by pig owners on the requirements and that the interpretation of these findings needs further investigation. Enforcement of the 20-day standstill lies mainly with the Local Authorities but it is difficult to monitor and identify specific contraventions unless detailed information can be provided from the movement databases. A number of recommendations cover the use of movement databases to identify contraventions of the 20-day standstill to enable appropriate action to be taken.

21. Chapter 8. Pyramids were introduced many years ago in order to facilitate the movement of pigs in a vertically integrated industry without imposing the 20-day standstill. Over time industry practices have changed to such an extent that there may be an increased potential for disease spread within and into pyramids. The current level of integration and the size of the big companies make this more of a challenge. EPIC research has indicated that movements into, up and out of pyramids as well as movement in from non-approved premises appear to occur, all of which have the potential to introduce and spread disease. These conclusions are based on an analysis of the movement databases but in reality, there can be an explanation for some of these unacceptable moves in particular the use of isolation facilities.

22. It is difficult to picture the full structure and interconnections of the pyramids or the linkages with the approved holdings further down the pyramid. This wider ‘pyramid’ is less tangible and harder to visualise and there is some cross-over of supply. The pyramid structure is constantly changing especially with outdoor pigs units which may frequently move to different paddocks or to different holdings every two or three years. APHA receive many PRIMO approval applications each year. Consequently, the concept of pyramids needs to be overhauled which may require the introduction of new measures or for the industry to change the way in which it operates.

23. The review proposes a number of changes in the short term mainly to obtain more details of the current pyramid structure linking all the members of pyramids together from the top with the breeding companies to the bottom with the weaner-breeder/rearer. Clarifying the rules for approval and operation of pyramids is required for both for producers and APHA staff especially the need to record movements for all moves even those within the pyramid. Other proposals are linked to reducing the potential for disease spread into and within pyramids which could require the removal of some of the 20-day derogations for specific types of movements and requiring more use of isolation facilities instead.

24. The review considers some proposals for a radical change to pyramids but keeping the basic structure for top to bottom movements. This would involve re-approval of all currently approved PRIMO holdings to assess whether the approval was needed in the first place. In many cases approval may no longer be required and in other cases where there are limited movements the use of the approved isolation facility could be an alternative. For the remaining approvals it

could be of value to work with the industry and for them to take full responsibility for their own pyramids with APHA adopting an audit and advisory role. This will take time to develop and must be done in partnership with the industry in particular the major breeding and production companies. A number of recommendations are made for both the short and long term proposals.

25. Chapter 9 deals with import and export. The review confirmed that most of the imports into GB are for breeding stock mainly high-quality boars and a smaller number of gilts for the breeding companies. Cull sows are imported from Northern Ireland for slaughter. Before 1 January 2021 the system for tracing imported pigs was unsatisfactory with no links between the various databases as well as confusion over who was responsible for entry of details into eAML2. Exports are primarily breeding stock to various EU states and other countries although finished pigs may be sent to Northern Ireland for slaughter.

26. The scale of the imports and exports in the different sectors can be obtained from a number of different databases, none of which provide complete and detailed figures of pigs involved. There is inconsistency between the various databases which can reduce the confidence in the accuracy of the figures and the ability to trace animals effectively in the event of a problem. The review makes recommendations for improved procedures and recording of imports and exports on the different databases. Additionally, concern was expressed by breeding companies about the situation and procedures regarding Border Control Posts (BCP) on the continent and in GB. Recommendations have been made concerning their future operation.

27. Chapter 10: The review describes the Electronic Animal Movement Licensing system. Whilst the functionality of eAML2 for England will be replaced by the Livestock Information Service (LIS), it is currently unclear how this will interface with Pig Hub and the other AHDB Pork tools. There is a description of the current system which includes details of the internal and external interfaces along with the way in which the data are used by AHDB Pork and other external users such as APHA and EPIC.

28. The availability of quality controlled and timely information on livestock movements remains critical to support policy decisions on disease control strategies, to provide details for operational disease prevention and control and to support the monitoring and enforcement of the rules and legislation. Major developments are required in the systems for recording livestock movements. A range of issues are identified in this review including i) tracings in the event of a disease outbreak, ii) restriction zones, iii) terminology and field headings, iv) data cleansing, v) linkages and vi) output. The reason these are highlighted is to ensure that any change from eAM2 to the new Livestock Information System in England does not result in the loss of any of the current facilities and leads to an improved system which should resolve a number of the issues highlighted throughout this review. Recommendations are made in relation to each of the issues above.

29. Chapter 11: The review concludes by covering five questions raised by Defra in the Terms of Reference. The review identified that a lack of clarity in a number of areas which appear to be due to misunderstandings which could be resolved by the improved communications and the provision of agreed guidelines. Non-compliance with the legislation was of concern to number of interviewees. These included the failure of all eligible movements to trigger the full 20-day standstill although some of this was found by analysing the movements' databases when the situation at holding level could provide an explanation if investigated. Failure to register was thought to be an issue with some of the pet pig owners. Most pig owners would wish to comply with legislation whilst industry view was that non compliances were not a major issue.

30. The industry continues to change but the removal of the 20-day standstill derogation would involve a major restructuring of the way which some sectors of the industry operated. Any such changes would need to take place over a sufficient timespan to allow the companies to adapt. The industry did not raise any additional movements that they wished to have as they were content with the current arrangements. They commented that the present system worked well and there was concern should there be any changes. It was considered by the industry that PRIMO works quite well and meets a need of the industry.

Summary of recommendations

Records/Registration

Chapter 5

Recommendation 1: Revise the current legislation to make it a legal requirement for all pig owners to register and reregister pigs on an annual basis.

Recommendation 2: As part of the legal registration process the information required from all commercial pig owners should include the details listed in the Top 10 questions outlined in the report from the Pig Health and Welfare Council.

Recommendation 3: As part of the registration process for pet pig owners, hobby farmers, city farms and small holders there needs to be some assessment of the suitability of the owner and premises to keep pigs (e.g., no pigs in inner city blocks of flats). The information required should be less than that for the commercial holdings but include that currently collected by APHA and those sections of relevance from the Top 10 questions when issuing the herd mark.

Recommendation 4: Develop an online system to enable owners to enter their registration details, record their annual pig numbers and modify their information as necessary. Link the system to the existing eAML2 in England or its replacement in due course.

Recommendation 5: Design a system that is compatible with LIS. Potentially merge into LIS the RPA, Defra, and APHA animal related registration systems, creating a one shop stop with all of the data in one place or alternatively set up a hub which can bring information together.

Recommendation 6: Ensure all databases must be able to transfer information seamlessly, accurately and in a compatible format. This is critical with eAML2 and ScotEID and even more so with proposed development of the LIS in England, EID Cymru system in Wales and the changes to ScotEID

Recommendation 7: Further review the use of the Temporary Land Association for pig holdings to asses risk and whether the distance should be reduced to 3km taking into account potential issues for outdoor pig units. (See also Chapter 5 paragraph 16 and 33).

.Recommendation 8: To ensure that pet pigs are registered, satisfactory on going recording or registration is required. This should be focusing on education and raising awareness via publicity and contacting those selling pigs especially via the internet

Identification

Chapter 6

Recommendation 9: The current system has disadvantages but using ear tags and tattoos is acceptable at present. In the longer term there should be a move to electronic tagging of pigs from the time they leave their holding of birth to ensure full traceability unless the current work on DNA tracing or facial recognition can deliver improved traceability. An economic assessment of introducing electronic tagging should be carried out.

Recommendation 10: There is currently a need to include electronic identification tags as an additional and acceptable method of officially identifying pigs. Legislation should specify that tags include the official herd mark and a unique individual identification number in all cases.

Recommendation 11: The issue of holes in the ears when exporting to China needs to be addressed both by dealing with the Chinese authorities but also reviewing the requirements for exports from Denmark and the Netherlands. There is a need to assess whether ears with holes would be prohibited or whether there would be a price reduction compared with ears without holes. The current trade is worth around £2.7 million (AHDB July 2021). (Since this report was written further information on exports to China has been obtained and is shown at Appendix 5)

Recommendation 12: It would be appropriate to have further discussions with the 3 major production companies (integrators) to assess whether they would prefer to develop their own systems or to have a uniform system across GB. Also, to ensure they are involved in any developments of the official livestock movements systems. A uniform and compatible system would be the most appropriate.

Recommendation 13: There must either be a voluntary arrangement or a compulsory requirement that where electronic tags are used and if the information is stored on private databases that these are compatible with the statutory transfer of the information to the official government livestock movement databases.

Recommendation 14: There should be a phased approach to any changes to identification in order to allow for technology to be fine-tuned and encourage industry engagement to maximise the use of the data.

Recommendation 15: In the short term as the pig industry already uses tags in their breeding stock a first step could be to make the electronic tagging of gilts, sows and boars compulsory by introducing legislation to that effect. A full economic assessment would be needed as there could be significant cost involved with a compulsory requirement.

Recommendation 16: Agreement is needed on the use of UHF or LF tags so that the corresponding readers on lorries and in abattoirs can read the tags. Discussions should be held with the pig industry and the tag manufacturers to decide which RFID system should be used. Once this is decided the frequency could be included in the legislation requiring the use of electronic tags. Note in the sheep industry legislation requires the use LF tags. An economic assessment of each system should be carried out.

Recommendation 17: In the longer term if the pig industry increasingly begins to use electronic tags a decision may be needed to introduce legislation that all pigs leaving the farm of birth must have electronic tags but unless there is agreement on the frequency to be use this could difficult

Recommendation 18: All pet pigs should be microchipped along the same lines as microchipping for cats and dog and a single central register should be developed and used to ensure no microchipped pig enters an abattoir.

Recommendation 19: The identification requirements for pigs being imported from or exported to EU member states need to be updated in the legislation. Clarification is required on whether EID tags would be acceptable for export and if so which system LF or UHF is to be used.

Movements

Chapter 7

Recommendation 20: The livestock movement databases need to automatically identify non-compliance with the 20-day standstill. The information should then be provided to either APHA or the Local Authorities in a format which is simple and easy to follow.

Recommendation 21: In order to carry out their enforcement function Local Authorities in England require an updated framework agreement and funding to provide specific services in relation to PRIMO. There would be separate requirements in Scotland and Wales

Pyramids

Chapter 8

Recommendation 22: Further work should be carried out to identify the detailed structure of each pyramid and the relationships at each level.

Recommendation 23: Detailed discussions should be held with the individual heads of the breeding companies and the integrators once a year by APHA at a GB level to review their derogations, approval, and organisational structure.

Recommendation 24: Develop information systems which hold all the details of all pyramids and their members in one place along with the movement data which is easy to update and interrogate. A system is needed that can be automatically updated when new information is available.

Recommendation 25: In the longer term there is need to consider the removal of the derogations although this would need discussion with industry to assess how this could be introduced over time with changes to industry practices.

Recommendation 26: Discussions with the industry to clarify and agree the definitions of the different types of herd and movements which are and are not permitted

Recommendation 27: Continued training and audit of APHA Veterinary inspectors to ensure there is uniform action across GB with regard to the approval and management of pyramids.

Recommendation 28: Ensure and maintain biosecurity requirements for all approved holdings and hauliers to prevent disease entering pyramid and being spread via hauliers.

Recommendation 29: The biosecurity requirements for outdoor units should be reviewed and must be implemented rigidly for the nucleus/ multiplier and multiplier herds with no room for any concessions to be granted for example in respect of the double fencing of outdoor units by the Veterinary Inspector of the Department responsible for approval.

Recommendation 30: Prohibit the use of the Temporary Land Associations for outdoor herds or failing that reduces the distance from 10 miles to 3km to mirror the zone if notifiable disease were to occur.

Recommendation 31: Within a single pyramid the source of pigs moved vertically onto approved holdings should continue to be limited to two with all sources being recorded on the APHA approval documents.

Recommendation 32: Require any movement into a pyramid from another pyramid or any other site to either trigger the 20-day standstill on the whole site or place the pigs into an APHA approved isolation unit before movement.

Recommendation 33: Enforce the ban on pigs moving back up a pyramid unless they go to a 20-day isolation approved by APHA with no movement up to a nucleus herd permitted.

Recommendation 34: Publicity and education are needed to ensure that any movements out of a pyramid to non pyramid holdings would trigger the 20-day standstill unless the pigs were isolated for 20 days in approved isolation by APHA.

Recommendation 35: Discuss with the breeding companies and the integrators the redesign of the system to take into account the informal pyramids both to enable movements and as part of the overall contingency plans in the event of a notifiable disease outbreak.

Import/ Export

Chapter 9

Recommendation 36: The introduction of the new electronic system “Import of products, animals, food and feed system” (IPAFFS) by APHA for recording imports must be directly linked to the new Livestock Information Service (LIS). This is to enhance traceability of imported pigs in the event of notifiable and/or non-notifiable diseases such as PRRS 2.

Recommendation 37: The new LIS could record the details of export movements or alternatively a separate more comprehensive system should be established to identify number and consignments of pigs.

Recommendation 38: An improved system needs to be developed to record and trace pigs arriving from Northern Ireland or the Republic of Ireland via Cairnryan or Fishguard.

Recommendation 39: Consideration should be given to establishing the BCP for imports of breeding pigs from the Republic of Ireland via Fishguard at an isolation unit established by the importing company.

Recommendation 40: Imports of breeding stock via BCPs at airports should be organised so that the pigs do not need to be unloaded and the physical and identify checks carried out at the isolation unit to which the pigs are moved.

Recommendation 41: The BCPs for imports of breeding pigs via European ports could be established inland at an APHA approved isolation unit to which the pigs are moved.

Electronic Animal Movement Licensing System 2 (eAML2)

Chapter 10

Recommendation 42: The output from eAML2 or replacement databases must be in a prescribed format which provides the information needed by APHA for tracing animals.

Recommendation 43: The functionality for mapping holdings within 3 and 10km restrictions zones for both notifiable and non-notifiable diseases must continue and be improved by the development of LIS.

Recommendation 44: Specific terminology which relate to pigs and the supply chain must be considered with the development of those parts of LIS relevant to the pig industry.

Recommendation 45: Automatic validation programmes should be included in any movement database with output in a format which can either require the pig owner to rectify or the authorities to carry out an investigation.

Recommendation 46: Any new movement's database for England such as LIS must provide better linkages to the movement systems of the Devolved Administrations including Northern Ireland in order to have full traceability of imported and exported pigs. In addition, links to the APHA databases for pyramids, pet pigs, import and export as well as the RPA and Red Tractor databases are crucial.

Recommendation 47: Output should be categorised as routine and ad hoc. Routine outputs should be regular and directed to those organisations such as the Local Authorities to enable them to identify issues and take appropriate action rapidly and clearly**.**

Recommendation 48: Every effort must be made to ensure that the three systems, LIS, ScotEID and EID Cymru are similar to ensure producers and other users in England, Wales and Scotland are able to understand and work with any of the systems. As legislation is likely to be needed to implement any changes it is equally important that the differences in any Statutory Orders between the countries are kept to an absolute minimum.

Chapter 1: Introduction to the report

Introduction

1. This report is in response to a request from Defra to review all aspects of the GB pig industry with the aim of informing policy. The report is primarily aimed at providing Defra details of the structure and operation of the GB pig industry not only for the commercial sector but also the non-commercial sectors such as small-scale producers and pet pigs. A detailed evaluation of the effectiveness and impact of the current legislation is a major component of the review

2. The changes in the structure and operation of the industry over the past decade could impact on the effectiveness of disease control and prevention measures by either increasing or decreasing the risks of disease spread. If risks are increased, it may be necessary to review the legislation and its associated procedures to take into account the factors involved and where necessary implement additional procedures. Alternatively, if the changes in the industry have resulted in a reduction of the risks, then it would be important to reduce the control burdens on the industry. The review also has to take account of other factors such as identification and traceability of pigs which are important for a number of reasons including exports, public health, and retail and consumer confidence.

3. Although the terms of reference were very comprehensive the key overall objective was to identify the important issues in relation to the current regime and make recommendations on the best outcome for GB and industry's long-term interests.

Terms of reference

4. The terms of reference for the "Review of the GB Pig industry structure" were provided by Defra and are shown in full at Appendix 1. This involves the provision of a detailed report to inform a policy review of the current PRIMO provisions in England. In particular the review was asked to consider the following: -

> i). Identify any areas of current regime which industry consider lack clarity (explain why) and might require further consideration to clarify or potentially (subject to disease control safeguards) review.
>
> ii) Identify any areas of non-compliance across all sectors and provide an explanation of why these non-compliances occur and the scale of them. Are they isolated or is there evidence of significant non-compliance? Defra are keen to understand areas of non-compliance so that they can address them either by clearer guidance or amending the rules where that may be possible (no disease control impacts) as opposed to taking action over the non-compliances.

Legislation

5. The responsibility for Animal Health and Welfare has been fully devolved to Scotland and Wales. As a consequence, each of the devolved administrations can make their own legislation which can vary between the different parts of GB. Previously this was under the umbrella of EU legislation which limited the degree of variation permissible in GB.

6. It is likely that all three countries could apply the relevant sections of Part IV of EU Regulation EU 2016/429 on the Animal Health Law. This may impact on any review of PRIMO although it is not a foregone conclusion that this will be the case or that all three would wish to comply with the EU legislation.

7. The legislation related to this study is twofold. The Disease Control Orders include the requirement for a 20-day standstill for pigs moving off a holding following incoming pigs. There are a number of derogations which permit movements onto a holding without triggering the 20-day standstill. Also, derogations exist to permit pigs to move off a holding even when pigs had moved on in the previous 20 days. The specific legislation is

- The Disease Control (England) Order 2003 as amended
- The Disease Control (Wales) Order 2003 as amended
- The Disease Control (Interim Measures) (Scotland) Order 2002 as amended

8. The Disease Control Orders also specify that if cattle, sheep, or goats move onto a holding with pigs there is a 6-day standstill on the moment of pigs off the holding or a 13-day standstill in Scotland.

9. Legislation has existed for many years to record pig holdings, identify pigs and control movements. The current legislation is contained in the “Pigs (Records, Identification and Movement) Orders 2011 as amended” for England, Wales and Scotland (PRIMO). This legislation is an example of where minor differences between the English and Scottish orders have developed on the way in which some aspects are implemented in the different countries.

10. As GB is one epidemiological unit in terms of animal movements and potential disease spread it is important that differences in legislation for disease control are kept to a minimum. The pig industry spans GB with movements predominantly from Scotland and Wales into England. For clarification GB refers to England, Wales and Scotland in this study and the work does not include Northern Ireland.

11. The Animal and Plant Health Agency (APHA) currently operates in the field as a GB-wide organisation providing agreed services to the Scottish and the Welsh Governments as well as throughout England. The operations of APHA throughout Great Britain are subject to the relevant law(s) pertaining to either that Administration or across GB as a whole.

Methodology

12. The review was undertaken over a short time period and comprised a mixture of desk-based study and face-to-face interviews. There was limited review of documentation relating to current arrangements of which three published reports are relevant. These reports were based on detailed analyses of data mainly derived from the two pig movement databases eAML2 for England and Wales and ScotEID for Scotland.

13. Two reports were published by Livestock Demographics Group of APHA which detailed information on the demographics of the GB pig industry and are entitled:

- Pig Enhanced Demographics summary for external report 2018 published in January 2020. (http://apha.defra.gov.uk/documents/surveillance/diseases/lddg-dem-report-pig2019.pdf) accessed 26 February 2021

- Pig Population report (Livestock population density maps for GB) published 2019. (http://apha.defra.gov.uk/documents/surveillance/diseases/lddg-pop-report-pig2019.pdf) accessed 26 February 2021

14. The third report by the EPIC Centre of Expertise on Animal Disease (EPIC 2016) provides a "Descriptive analysis of breeding pig pyramids in Great Britain and impact assessment of the national movement ban policy proposed during Exercise Walnut" A further report by EPIC not yet published investigated in more depth the structure, distribution and movements within, into and out of pyramids

15. Every effort was made to meet with all the organisations representing different parts of the pig industry in GB. Interviews were held with a wide range of stakeholders in Government and Industry. Interviewees were provided with the terms of reference as shown in Appendix 1 and asked a set of core questions which covered the structure of the industry, movements, import/export, identification, and other issues. These were augmented by questions specific to their areas of interest. All participants were invited to provide any further evidence that they thought was relevant. Any further information or clarification required was obtained directly with the interviewee. A total of 22 interviews were conducted by telephone or via Microsoft Teams. Details at appendix 2.

16. A number of meetings were held with representatives of the Scottish industry and government representatives as well as Welsh Government representatives. Their views are included in the different chapters as appropriate.

17. During the interviews stakeholders made valuable comments and suggestions quite specific to their particular areas of expertise which they felt would help to increase preparedness and minimise any future disease related disruption.

Future developments

18. Two developments are taking place within Defra which will impact on the outcome of this review. In both cases there is a close partnership between government and industry in their development. Any likely impact of these new developments will be noted in the relevant chapters of this report.

19. The Defra Livestock Information Programme (LIP) is a joint government-industry scheme to create a single system of registration and tracing for livestock in England. This will replace three existing systems: ARAMS for sheep, BCMS for cattle and eAML2 for pigs. Only England is covered by LIP as Scotland, Wales and Northern Ireland are also introducing systems which will carry out the same task. The Livestock Information Service in England (LIS) will collect data on these species in one place which will make disease prevention and management faster and more effective by improving the identification and traceability of pigs.

Source: (https://ahdb.org.uk/livestock-information-programme accessed 1 February 2021).

20. The Animal Health and Welfare Pathway (Pathway) for cattle, sheep and pigs for England has been designed by an industry and government partnership. The Pig Pathway Project Group has led the development of the pig component of the plan which will largely define health and welfare in the pig industry for the future. This will be achieved by investing in improving animal health & welfare. The first step on the Pathway, the Annual Health & Welfare Review, will launch in spring 2022, as part of the Sustainable Farming incentive.

21. The partnership with Defra led to a proposal to develop a national control plan to control and eradicate an agreed priority list of endemic disease using PRRS as a proxy indicator. The proposal includes communication, registration, disease prevention, and CPD for all pig keepers which will lead to a sustained behaviour change, more efficient production and better pig health and welfare. The areas of the proposal which relate to this review include registration of all pig owners, action with small holders, biosecurity, and communication.

Structure of the report

22. This is a comprehensive report covering a wide field as specified in the terms of reference. The main objective is to summarise the structure of the pig industry, record keeping, identification of pigs and movement practices. Issues which impact on the effectiveness of the PRIMO legislation are highlighted and recommendations made to improve the legislation and/or its implementation. In order to do this the report is structured around 11 chapters. The first four chapters set the scene and provide an introduction and information on the GB pig industry with the production cycle, the size and distribution of pig herds in GB and different categories of pig owners. This is important in providing background information which will assist in identifying potential risks and the measures which can be taken to mitigate those risks.

23. As the review is to inform policy in relation to PRIMO each of the remaining chapters deals with a specific issue linked to the terms of the legislation. Chapter 5 covers records and registration and chapter 6 the identification of pigs. Chapters 7 to 9 deal with movements covering general aspects, pyramids and import /export. Chapter 10 provides details of the electronic Animal Movement Licensing System 2 (eAML2**)** as this is referred to throughout the report. The final chapter provides the answers to the main questions posed by Defra in the terms of reference for the review. As there is an overlap between the topics in the review each chapter is self-contained and can be read in isolation but as a result there will be some duplication between the chapters.

Acknowledgements

24. We would like to take this opportunity to thank those organisations and individuals who made time to discuss the situation and who provided considerable input to explain their positions and concerns. There was a positive input from all concerned with an acceptance that the industry was changing and that the review was appropriate.

Chapter 2: GB Pig Industry

1. Introduction

1. The purpose of this chapter is to describe the basic pig reproduction cycle and the way this operates in the breeding and commercial sectors. It also provides details of the types and sizes of the different holdings along with the performance figures showing the ages and weights of pigs at different staged of the cycle. Outdoor pig production is included as are details of the farm assurance schemes specifically Red Tractor.

2. Production cycle

2.1 The basic production cycle

2. The pig reproduction cycle begins with the sow and the production of weaners, followed by rearing and ends with the finished pigs. In the commercial production chain, the finished pigs will go for slaughter for either pork or bacon production. If the finished pigs originate from within the top of a breeding pyramid, they will go to supply high quality gilts and boars from great grandparent and grandparent stock to the commercial herds as weaner-breeders.

3. There is a pyramid structure within the pig industry with a small number of nucleus herds containing pure bred breeding stock at the top of the pyramid. These supply animals to the multiplication herd which in turn provide high quality crossbred F1 hybrid breeding gilts to the commercial production herds. The different categories of herds in the pyramid can be summarised in table 1

4. It is important to differentiate between breeding herd and breeding company the latter is a company/organisation which produces the high-quality genetic stock which ultimately results in the supply of sows to the commercial sector. A breeding herd refers to a group of sows/gilts which produce piglets to be reared either for slaughter or as replacement breeding stock.

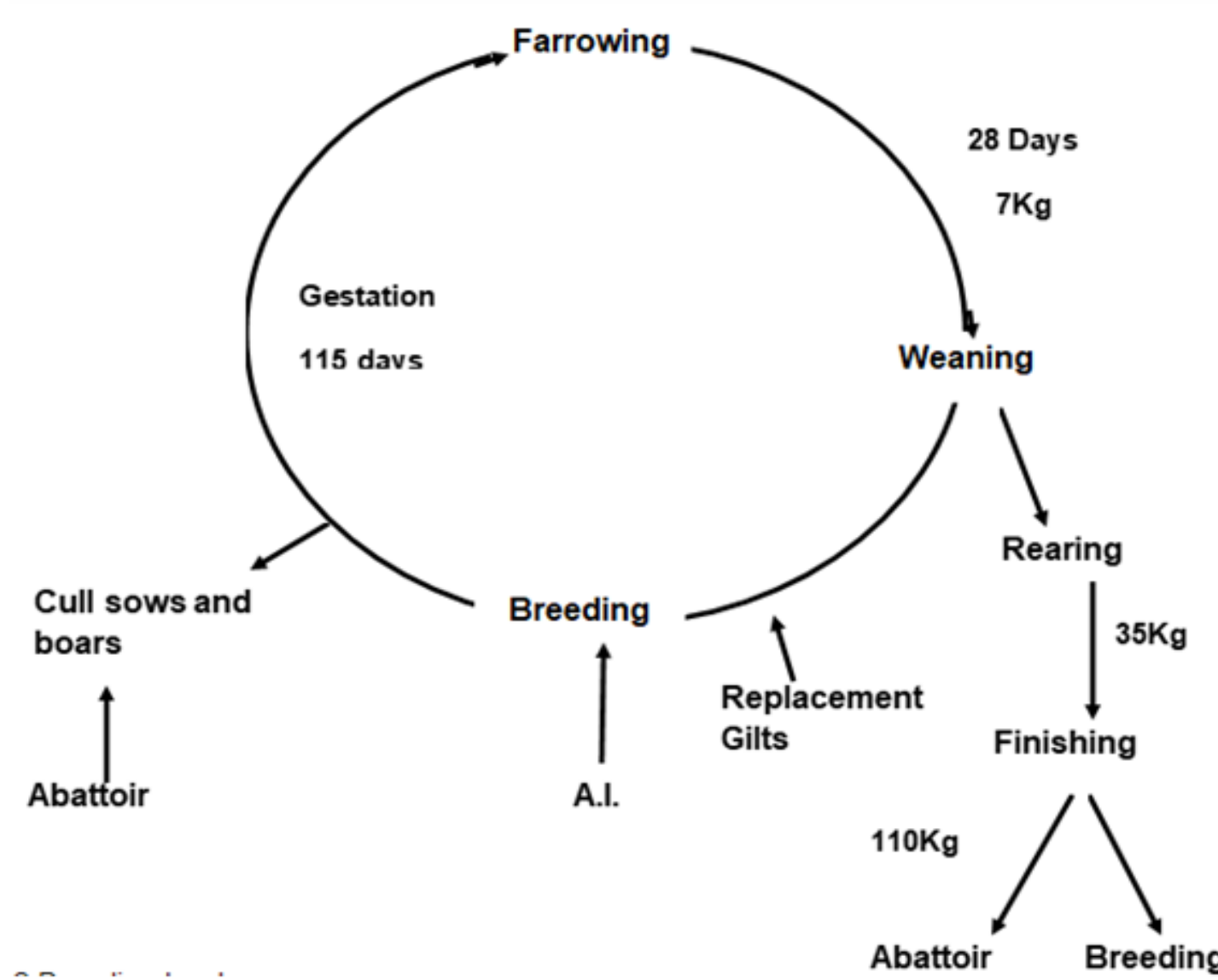
Table 1: Categories of herds in the pyramid structure

Type of herd	Category	Company classification	Purpose	Breeds
Nucleus	Great Grandparent	Breeding company	Maintain Pure bred lines of sows and boars Production of purebred boars for sale or movement to AI centres	Mainly Landrace, Large White, Duroc but also other minor breeds such as Hampshire and Yorkshire
Multiplier	Grandparent	Breeding company or Production company	Production of F1 hybrid sows	Usually Landrace X Large White
Commercial **Weaner-breeder**	Parent	Production company	Commercial sows producing pigs for slaughter	F1 Hybrid sow crossed with pure bred sire line. Duroc, Hampshire, Yorkshire

5. The basic pig reproduction cycle is the same for all types of herd whether small holders, rare breeds, breeding companies and production companies. This is shown in Figure 1 where there are four categories of pig within the cycle:

- Breeding pigs-sows, gilts, boars
- Piglets from birth to around 7kg
- Weaners/growers from around 7 kg to around 35 kg
- Finishers from around 35 kg to 110 -115 kg

Figure 1: The basic pig reproduction cycle



2.2 Breeding herds

6. There is wide variation in the size of commercial breeding herds which can vary from small herds up to herds with more than 2000 sows. The average commercial unit has in the region of 750 sows. The average gestation is around 115 days with a range of 110 to 120 days. Piglets in

the majority of herds are weaned at 28 days weighing around 7kg. Weaning at 28 days is the legal minimum unless specific criteria are met. In some commercial units weaning may take place slightly earlier and in others slightly later at 10kg. Weaning may take place much later on the rare breed, or small-scale producer farms.

7. Once the sows have been weaned and provided, they are in good condition they will usually come into heat at 4-6 days post weaning and be served by the boar or by artificial insemination. The conception rate to first service is higher than 80%. The oestrous cycle is 21 days and any sow that fails to become pregnant after 1 or 2 cycles will be culled. It is essential to minimise the number of days between farrowing and conception in commercial herds in order to maximise the number of litters per sow per year. Ideally the shortest sow cycle is 147 days with the production of 2.5 litters per year as shown below:

Gestation 115 days-Lactation 28 days-1st service 4 days-Total 147 days –Litters per year 2.5

8. In commercial units the old and non-productive sows are culled after between 4 and 6 pregnancies and replaced by gilts. This can mean that up to 50 % of the sows in some units may be culled each year. Culls sows are mainly sent to one of two specialist abattoirs.

9. Replacement gilts may be homebred or bought from the breeding companies often at 190 days of age and 100kg. Most gilts reach puberty at around 5-6 months but will not be mated until more mature at around 240 days of age and weight of 130kg. Commercial units will either purchase non-pregnant gilts on which they use a boar/ AI or in-pig gilts from a specialist nucleus/multiplier or multiplier provider. Batches of gilts will be brought into the herd or smaller numbers will arrive throughout the year. The movement of gilts or boars into the herd could trigger the 20-day standstill which could pose problems if weaners are regularly moved off. Gilts or Boars could be moved into isolation without triggering the standstill.

10. In some cases, the incoming gilts may be segregated on the farm in a separate unit and only join the main breeding unit when diagnosed as pregnant or after their first litter.

2.3 Rearing units

11. Alterative names include nursery unit or weaner rearing units. Weaners are moved to separate pens/units where they are kept until they reach around 35kg at 70 days. They are then moved to the finishing pens/units where they remain until slaughter. The rearing unit may be on the same holding as the breeding herd or it may be on a completely separate holding. If the later then weaners may move on to the holding from multiple sources to fully stock the premises although it is advisable to avoid mixing batches wherever possible.

2.4 Finishing Units

12. In the commercial finishing units pigs will go for slaughter when they reach 85-90kg for the pork market and 110-115kg for the bacon and meat product markets. In the breeding companies the pigs will flow down the chain to ultimately produce the commercial weaner breeding sows. The finishing unit may be on the same holding as the breeding and rearing units or on a completely separate holding. In order to stock a finishing unit it may be necessary to move pigs in from a number of rearing units.

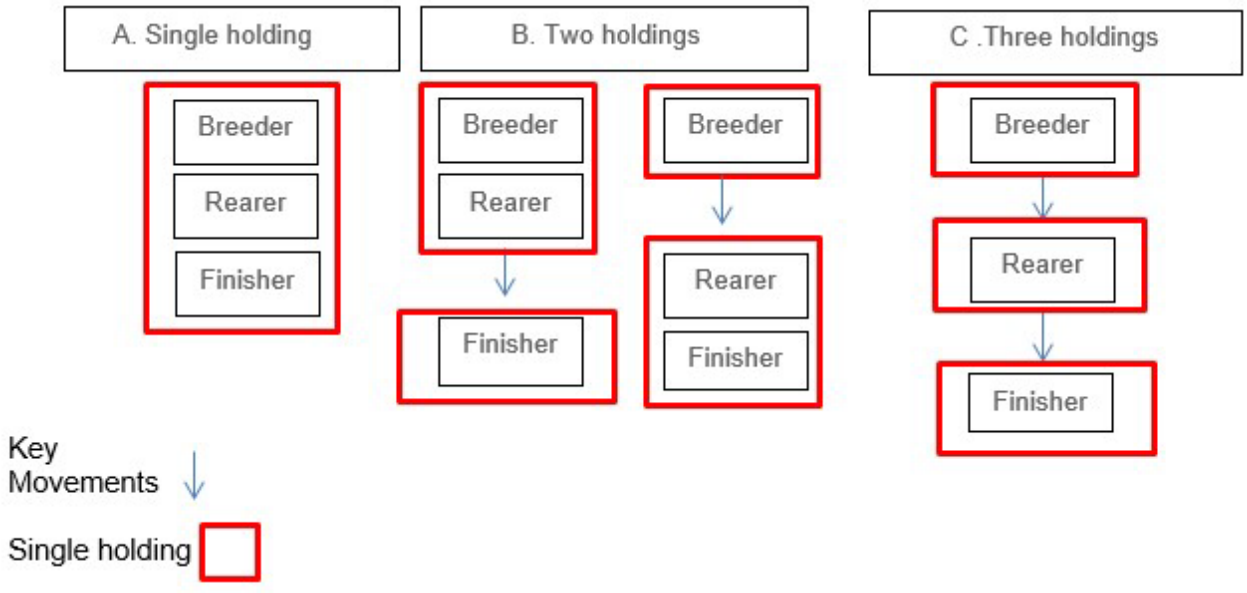
2.5 Relationship between holdings and units

13. A holding is defined in PRIMO as “any establishment, construction or, in the case of an open-air farm, any place in which pigs are held, kept or handled;”

14. The type of relationship will depend on the way in which the enterprise is managed but is likely to fall into one of three overall categories although it must be recognised that one size does not fit all enterprises and there will be variations in the way businesses are managed. These range from the small family farm to the larger commercial company which will have a multi-site production system. These relationships will apply whether the units are indoors or outdoors. The various combinations for holdings and units are shown in Figure 2 below.

- Smaller companies or family farms possibly with 50 to 500 sows will usually breed, rear and finish on one holding. Figure 2A which is also known as farrow-to-finish
- Medium sized commercial or breeding companies are more likely to breed and rear on one holding and then transfer the pigs to a separate holding with a finishing unit or they may breed on one holding and transfer pigs for rearing and finishing to a second holding as shown in Figure 2B. Some of these companies may farrow-to-finish on the same holding. Figure 2A
- Larger commercial companies or breeding companies may either breed and rear on one holding and transfer the pigs to a separate holding for finishing or breed, rear and finish on 3 separate holdings. Figures 2B and 2C. A minority of the larger companies may farrow-to-finish on one holding 2A

Figure 2: Relationships between holdings and units in the production of finished pigs



2.6 Breeding herd sizes

15. Breeding herds: The unit size will vary on the type of farm involved. These may be small commercial private farms, often family farms with between 50 and 750 sows in a single breeding herd. Other enterprises may have multiple and separate breeding herds each containing 750 sows each. With the larger corporates known as Integrators the individual breeding herd size may range from 500 to 1,600 sows but some herds may have around 2000 sows. A major integrator may have up to 30 to 40 breeding herds within its organisation meaning that they could have a total of from

25,000 to 50,000 sows. For the nucleus herds the number of sows will be relatively small with larger numbers in the multiplication herds.

2.7 Rearing and finishing unit sizes

16. The sizes of the rearing and finishing units can vary considerably. In recent years there has been a move to increasing the capacity to around 2000 pigs for each finishing unit for commercial pig production. As 2,000 is the number of places at which an environmental permit is required for indoor units many producers will operate just below this level. Details on average sizes are available from AHDB for a number of years. Details are shown in table 2.

Table 2: Rearing and finishing unit sizes for GB herds in 2019

Rearing

Herd structure	**Average**	**Top Third**	**Top 10%**
Average number of pigs	2590	2348	3362

Pig performance	**Average**	**Top Third**	**Top 10%**
Average weight of pigs at start (kg)	7.3	7.2	7.1
Average weight of pigs produced (kg)	36.5	32.7	30.9
Days in herd	61	56	56

Finishing

Herd structure	**Average**	**Top Third**	**Top 10%**
Average number of pigs	2049	2061	2707

Pig performance	**Average**	**Top Third**	**Top 10%**
Average weight of pigs at start (kg)	38.8	34.3	29.1
Average weight of pigs produced (kg)	111.2	111.8	112.7
Days in herd	95	88	103

Combined rearing/feeding

Herd structure	**Average**	**Top Third**	**Top 10%**
Average number of pigs	3648	4017	3231

Pig performance	**Average**	**Top Third**	**Top 10%**
Average weight of pigs at start (kg)	7.7	7.7	8.0
Average weight of pigs produced (kg)	111.5	113.6	111.5
Days in herd	143	140	138

Note: Rearing; Feeding; and Combined Rearing and Feeding do not necessarily directly correspond.

Source AHDB: https://ahdb.org.uk/pig-performance-trends-and-cop-sensitivity-for-feed-and-performance accessed 28 February 2021

3. Outdoor Production

17. Outdoor production follows the same three stages as seen with indoor production. The weaner breeding herd has access to straw bedded arcs or huts in either a large communal outdoor farrowing paddock or individual farrowing paddocks. There are variations to the production system on some farms. Piglets may be weaned and reared outside in paddocks before being moved for finishing into straw bedded systems in barns or to purpose-built buildings. In other systems piglets may be brought indoors for rearing and finishing at or shortly after weaning. Outdoor units are found mainly in the East of England and the North of Scotland although they can be found in other areas of GB.

18. Outdoor commercial pig breeding is unique to the British pig industry. According to the 2009 Defra Farm Practices Survey an estimated 40% of British pigs are outdoor-bred and 2% live outdoors for their whole lives. At the same time the Defra survey suggested that 40% of adult breeding pigs live outdoors. This is based on the Defra report and covers the situation in 2009 which does not appear to have been repeated in any subsequent Defra Farm Practice Surveys. This means there is no up to date information on the percentages of pigs in different categories which are bred, reared and finished outdoors.

Source: Defra Pig and Poultry Farm Practices Surveys 2009- England published in May 2010

https://webarchive.nationalarchives.gov.uk/ukgwa/20130123162956/http:/www.defra.gov.uk/statistics/files/FPS2009-pigspoultry.pdf

accessed 19 February 2022

19. Outdoor production presents a number of challenges not least the risk of disease transmission via the airborne route from neighbouring herds or from wildlife. Most outdoor units are on rented land which is either as part of an arable rotation or on an estate. The availability of suitable land may be an issue, but many arable farmers are looking for alternative land uses due to reduced cropping options and pig production is a viable option. It can be a challenge to find suitable land for outdoor pig farms, the right soil and climate is important, and those farms situated on less suitable land is of concern. Pig farms have to compete with arable farms for land. Rotating pigs with crops can work well. The outdoor land can support pigs for 2-3 years after which they need to be move on.

20. It is anticipated that the industry will continue to consolidate into three companies wholly owned by three integrators: Cranswick, Karro Food Group and Pilgrim's Pride. It is unclear how much more consolidation could take place in the UK. Some consider that there is little scope to expand outdoor units. Others expect the outdoor industry to continue to expand, particularly because of consumer interest in welfare and there is a perception that outdoor bred animals have higher welfare. Outdoor breeding is ingrained in the UK. Outdoor bred pig production is a real point of difference for some retailers. Outdoor units are likely to go forward with innovations helping progress.

4. Assurance Schemes: Red Tractor (RT)

21. There are a number of assurance schemes in GB including Red Tractor, RSPCA Assured, and the Soil Association. For the purposes of this review only Red Tractor is included. Coverage of the Red Tractor Pigs Scheme includes the whole of the UK including Northern Ireland but with few RT members in Scotland where the Quality Meat Scotland (QMS) Pigs Assurance Scheme is the

main assurance scheme. The QMS Pigs Scheme is recognised by RT as an equivalent assurance scheme and their products can carry the RT logo.

22. Current figures for RT membership in GB are 2200 sites with the majority being primary sites with a smaller number of secondary sites. A primary site may have a maximum of three additional sites linked to it- nursery or finisher units close to the main site. Although these figures relate to GB they do not include QMS sites. Smaller farms of 50 sows tend not to participate in the RT scheme as the cost of quarterly vet visits is prohibitive but this can mean their access to abattoirs is limited, as the main pork processors and retailers require farm assurance as part of their buying specification. Other farms which do not need RT membership can sell their pigs to non-assured abattoirs or to assured abattoirs provided the assured and non-assured products are kept segregated

23. Historically it has been stated that 95% of pigs slaughtered in the UK come from RT assured farms. An analysis of movement records on eAML2 based on the percentage of farms listed as Red Tractor (or equivalent scheme) in 2020 indicted that this is correct for England and Wales. In Scotland 95% of pig producers are members of QMS.

24. There are 120 abattoirs on eAML2 of which 15 are BMPA Pork Scheme abattoirs. There may be a few others, but it is difficult to tell whether they are an abattoir or cutting/further processing plant. There are 11 pork abattoirs that participate in the Red Tractor Meat & Poultry Processing Scheme; however, the main large pork abattoirs are assured under the BMPA Pork Scheme which RT recognises as an equivalent scheme meaning pork processed in these plants can carry the RT logo. The RT scheme provides standards and assurance across the entire supply chain, including animal feed, farms, haulage, collection centres, markets, abattoirs, and processing plants.

25. The RT Livestock Transport Scheme (covering hauliers of pigs and ruminants) has 289 members in GB with 1081 recorded vehicles. The individual trailer number not the cab registration number goes against the RT membership as the cab may potentially be used across different trailers. Farmers using their own vehicles to transport pigs have their trailer(s) assessed as part of their pig holding RT audit.

26. The role of RT is to provide assurance to customers and consumers that pork has been produced to a rigorous set of standards covering animal health and welfare, environmental protection, food safety and traceability. These standards are checked at every stage of the supply chain and under RT rules pigs are required to be born, reared and slaughtered on RT-assured holding(s) for their whole life. There should be no non-assured pigs on the site, but the scheme does allow non-assured (i.e. not assured to Red Tractor or a recognised equivalent scheme) breeding stock (boars and sows/gilts) and semen to be brought on to assured sites, to facilitate genetic improvement. RT covers pigs from farm of birth thorough to the abattoir and the processing plants. The RT and eAMLeAML2 systems do not fully support traceability back to holding of birth.

27. From the perspective of this review and the later discussions on risk mitigation measures to prevent and control disease it is important to note that there have been improvements in biosecurity over the past 10 years. These are partly because of producer participation in the Red Tractor scheme with the routine quarterly veterinary visits and regular auditing of the RT standards including those on biosecurity.

5. Performance Statistics

5.1 Source of the figures

28. The source of the statistics in tables 3 and 4 was from the AHDB pig costings and herd performance which contains the latest physical performance data for the GB pig herd. This covers both indoor and outdoor breeding herds and the feeding herd. A range of performance indicators are provided for each category. *The costings and performance results are from the AHDB benchmarking activities (at home and abroad) which only includes herds* which feed into AHDB benchmarking but this does not include all national herds. *The benchmark enables farmers to compare their performance (technical and financial) with both themselves (year on year) and others with similar production system or those competing in the same market.*

Source AHDB: https://ahdb.org.uk/pork-costings-and-herd-performance-2 accessed 28 February 2021

5.2 Indoor/outdoor breeding herds

29. Details of the breeding statistics for the indoor and outdoor herds are shown in Table 3. These are the average figures in each category and in some cases, there can be a wide range of figures. These details are shown to support the figures provided in the earlier sections of this chapter or later in the review. Of particular interest is the replacement rate for the breeding sows in the commercial herds which can range from 35 to 50%. With around 340,000 breeding sows in GB there will be considerable demand for replacement gilts either from within internal closed herds or from the major breeding companies. It is interesting to note the average number of productive sows in the herds although the numbers can vary from 50 to 2000 sows in the commercial production herds.

Table 3: Key performance indicators for indoor and outdoor breeding herd in December 2020

KPI	Indoor Breeding Average	Outdoor breeding Average
Productive females	637	908
Average weaning age (days)	26.62	26.45
Average weaned weight per piglet (kg)	7.4	7.13
Pigs weaned per litter	12.2	10.93
Total pigs born alive per sow per year	31.32	28.09
Litters per sow per year	2.25	2.23
Non-productive days	20.6	20.38
Farrowing rate (%)	83.12	83.27
Replacement rate (%)	54.59	48.52
Pigs weaned per sow per year	27.49	24.55

5.3 Rearing and finishing herds

30. The statistics for the rearing and finishing periods are shown in table 4. Rearing is from around 7 kg to 35 kg with finishing in a separate unit from 35 kg to 111 kg. It is also possible that rearing and finishing can be combined on the same holding as shown in the 3rd column. As with the breeding herds these are average figures with a wider range with the top 10 and the top 3rd of herds performing much better.

Table 4: Key performance indicators for rearing and finishing herds December 2020

KPI	7-35 kg Average	35 -110 Average	7-110 Average
Feeding days per pig	62	83	149
Weight of pig produced (kg/pig)	38.53	111.8	111.2
Weight at start (kg/pig)	7.46	37.8	7.7
Average carcase weight per pig (kg)	-	84.7	84.3

Chapter 3: Size and distribution of GB pig herds

Key findings

1. Unfortunately, there is no accurate and up to date information on the number and size of holdings with pigs in GB.

2. The current legislation is inadequate as it only collects a negligible amount of information about the holding and the category and number of pigs being kept.

3. As can be seen from this report the pig movement databases in England and Wales and Scotland can currently provide the best coverage of the entire pig population of GB.

4. From a comparison of a number of other databases it was concluded that the pig movement databases would provide the best coverage of the entire pig population of GB.

5. The detailed analysis of holding size based on movements indicates that 72.1% of the identified holdings were probably pet pig owners or hobby farms and 14.4% were small holdings based on movements.

6. Any analysis of movement data may not reflect the true picture due to owners ceasing to keep pigs, not moving pigs in the specified period, failing to register on the system.

7. Increase in leisure pig keeping with small holders, Hobby farms and pet pigs but unless these owners register, they will not be identified in any system.

8. The information suggests at least 25,000 holdings with pet pigs, hobby farms or small holders. This does not account for the pet pigs which are not recorded and may be continually increasing due to demand.

9. The highest density of pigs is in the east of the country, but the highest density of holdings is in Wales and the Southwest.

10. In the case of pet pig owners, they may not wish to move pigs and consequently would not be identified by an analysis of movement records.

1 Introduction

11. The aim of this chapter is to: -

- review the possible data sources for information on the size, categories, and distribution of pig holdings in GB
- describe the numbers and categorise of holdings
- show the distribution of the holdings in GB

2 Data sources

2.1 Introduction

12. Unfortunately, there is no accurate and up to date information on the number and size of holdings with pigs in GB. Data on holdings is held in a variety of databases. The RPA and the

APHA database (SAM) have details of holdings but in both cases the data depends on the pig owner notifying the two organisations when pigs are acquired and when they cease to keep pigs on the holding. Whilst it appears that commercial holdings are recorded it is likely that

- Not all pet pigs, pigs on hobby farms, or shops selling pigs are notified to RPA and APHA by their keepers.
- Occupiers who cease to keep pigs do not notify the change in circumstances

2.2 Annual Agricultural Census

13. Results on the number and types of holdings are available from the Defra June Survey of Agriculture which is a large sample survey sent to a representative sample of holdings across England. As the results are based on a sample survey and are subject to a degree of sampling error and do not take into account other sources of survey errors, such as non-response bias or administrative data errors.

2.3 Movement databases

14. Data are also available from two movement databases, the Electronic Movement Licensing System for Pigs (eAML2) covering England and Wales and Scottish Livestock Electronic Identification (ScotEID). The data from both databases has been analysed by APHA, EPIC and AHDB. APHA carried out an analysis of movement data for the 2-year period January 2016 to December 2017 to identify premises with smaller numbers of pigs as well as larger commercial farms. The limitation to the movement databases are: -

i) Some of holdings will no longer be in operation without notification to that effect being provided,
ii) The information on movements may not have been entered correctly
iii) The owner failed to enter their movements.
iv) The owner has not registered and moves pigs illegally.

15. A comparison was made between a number of other population databases from which it was concluded that the pig movement databases would provide the best coverage of the entire pig population of GB.

16. This is confirmed in the Data Quality Statement in the APHA report which states that “A comparison of holdings present in eAML2, the Agricultural Survey, APHA’s operational database called Sam, the Red Tractor assurance scheme and the British Pig Association (BPA) membership indicated that eAML2 consistently matched the highest percentage of holdings in the other datasets. eAML2 was also the only dataset that included most of the BPA holdings (LDDG annual report 2014-2015)”

3 Size and categories of pig holding

3.1 Distribution of pigs and holdings

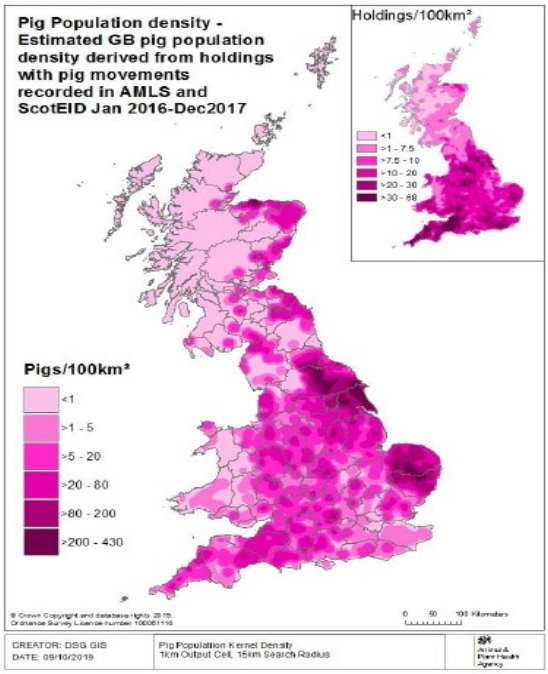
17. Maps of livestock populations across Great Britain covering the period 2016/17 were produced by APHA’s Livestock Demographic Data Groups (LDDGs). These were published in 2019 entitled the “Pig population report: Livestock population density maps for GB-2019”. There are some caveats on the data which are detailed in the data quality statement in the report in order to limit misinterpretation. These can be found in the original report at

Source: http://apha.defra.gov.uk/documents/surveillance/diseases/lddg-pop-report-pig2019.pdf

accessed 26 February 2021

18. A density map with numbers of pigs and the number of holdings was produced as shown at figure 3. The report describes definition of holding as “any holding on which pigs are moved to and from during the period of interest. This definition includes markets, abattoir and other non-pig keeping premises, although these are estimated to be a small proportion compared with the pig-keeping holdings”.

Figure 3: Pig Population density in GB



19. It can be seen from the map that the highest densities of pigs are in East Anglia, the Yorkshire/Humberside area and the Northeast of Scotland where a number of major commercial companies have pig holdings. From the inset map it is apparent that the Southwest of England and Wales have the highest density of holdings although the number of pigs is much lower suggesting that these are small commercial, hobby units or pet pig owners.

3.2 Numbers and categories of holdings

20. Details from the Agricultural Census for England published in June 2020 are shown in Appendix 3. This includes pig livestock type, size band with the numbers of holdings and pigs for 2018 and 2019. The results relate to commercial holdings only and would not include pet pigs or other non-commercial holdings. Only breeding and fattening pigs are included in the table. Based on the census category of 1-4 breeding pigs there were 2,500 holdings with 4,000 breeding pigs. On the category of 1-9 fattening pigs there were 2,000 holdings with 8,000 fattening pigs.

21. APHA published a detailed report in January 2020 which provides the information in this section. The analysis by APHA identified 27,956 holdings in GB. The distribution of holdings by country is shown in table 1. This was based on holdings with movements on or off during that period. Further information from an EPIC project covering a 3-year period from 2016 to 2018 found figures within the same range as shown. (Personal communication). Likewise, the APHA database had considerably more than 30,000 holdings recorded. (The details in tables 5-8 are from the APHA report)

Source APHA: http://apha.defra.gov.uk/documents/surveillance/diseases/lddg-pop-report-pig2019.pdf

accessed 26 February 2021.

Table 5: Count of pig holdings, by country

Country	APHA 2016-2017	EPIC 2016-2018
England total	22,769	24,953
Scotland total	2,204	2,334
Wales total	2,983	4486
GB Total	27,956	31,550

Source APHA Report

22. Further analysis was carried out by APHA looking at the numbers of pigs moved (either incoming or outgoing movements) related to a holding in a 24-month period. This enabled a breakdown of holdings into one of 5 estimated size categories based on the number of movements during the 24-month period. Details of the five categories are shown at table 2.

Table 6: Number of GB holdings in in Category 1 to 5 in 2016/17

Size category of holding	Numbers of pigs moved in 24-month period	Comments
1	1-25	Size suggests pet pig owners or small holdings
2	26-300	Size suggests small holdings
3	301-2,000	Size suggests small commercial farms
4	2,001-8,000	Size suggests medium commercial farms
5	8000+	Size suggests large commercial farms

Source APHA Report

23. The breakdown of the holdings by estimated size category and country in which the holding was located enabled a more detailed identification of holding and size as shown in table 3. It can be seen that 72.1% of the identified holdings were probably pet pig owners or hobby farms and 14.4% were small holdings. The percentages changed very little when the total figures for GB were included.

Table 7: Country totals and percentages of each of the five categories

Size category (No. of holdings)

Country	1	2	3	4	5	Total
England	16,423	3,350	732	970	1,294	22,769
Scotland	1,607	223	123	121	130	2,204
Wales	2,455	456	46	18	8	2,983
GB Total	20,485	4,029	901	1,109	1,432	27,956

Percentage of country total

Country	1	2	3	4	5
England	72.1%	14.7%	3.2%	4.3%	5.7%
Scotland	72.9%	10.1%	5.6%	5.5%	5.9%
Wales	82.3%	15.3%	1.5%	0.6%	0.3%
GB Total	73.3%	14.4%	3.2%	4.0%	5.1%

Source APHA Report

24. Unlike the census data which indicates there are over 2,500 commercial holdings with 1- 4 breeding pigs there are at least 25,000 holding with pet pigs, rare breeds, hobby farms or small holders. The number may be lower as this includes the holdings which moved pigs over the project period of 2016/17 a number of which may no longer be in operation but without notification being provided to the eAML2 or ScotEID. On the other hand, it could be higher as owners with a single pig may not be included in the data if they do not move a pig within the two-year period or are not registered.

25. The figures for herd category in Table 2 based movements do not necessarily reflect the size of the holdings. Based on the average number of finished pigs per sow as indicated in chapter 2 it is possible to calculate the theoretical number of finished pigs produced from different sizes of production herds. This is shown in table 4 which errs on the high side as it does not take into account deaths or the regular culling of the sows.

Table 8: Projected finished pig production from herds of different sizes

No of sows	Average Pigs produced per sow per year	Number of pigs finished per herd per year
50	25	1,250
100	25	2,500
500	25	12,500
750	25	18,750
1000	25	25,000
2500	25	62,000

Source APHA report

26. The size of the commercial production breeding herds ranges from 500 to around 2000 sows. The integrated commercial companies will have a multitude of breeding herd with sizes ranging from 750 to around 2000. So, a very large company with 25,000 breeding sows has the theoretical capacity to produce around 625,000 finished pigs for slaughter per annum from possibly 30-40 breeding herds.

4 Numbers of pigs in GB

27. Data source: UK Agriculture departments June Survey/Census of Agriculture. As the results are based on sample surveys, they are subject to a degree of sampling error and do not take into account other sources of survey errors, such as non-response bias or administrative data error.

28. In another section of the Agricultural Census there are detailed annual statistics about the structure of the agricultural industry at 1 June 2020 in England and the UK last updated 25 January 2021. This information shown in table 9 and was taken from the annual time series section of the census statistics.

Table 9: Categories of pigs in England and UK 2020 (in thousands)

Pigs on agricultural holdings on 1 June 2020 in England and the UK	England	UK (i)
Total pigs	**4,021**	**5055**
Total breeding pigs	**405**	**502**
Female breeding herd	**319**	**402**
Sows in pig	232	295
Gilts in pig	41	57
Other sows	45	50
Other breeding pigs	**86**	**99**
Boars for service	9	11
Gilts not yet in pig	76	88
Fattening pigs (live weight)	**3,616**	**4,553**
110kg and over (incl. barren sows)	39	N/a
80kg and under 110kg	538	N/a
50kg and under 80kg	834	N/a
20kg and under 50 kg	1,000	N/a
under 20kg	1,206	N/a

Note:

(i) Not broken down by E,W S and NI only as UK
(ii) N/a Not available

Source:https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june accessed 26 February 2021 From the annual time series: 1983 to 2020 spread sheet

29. Figures are also available on the number of breeding pigs and fattening pigs in the UK as shown in table 10.

Table 10: Total pigs in UK as of June 2020 (in thousands)

Pigs	England	Scotland	Wales	Northern Ireland	Total
Total Pigs	4201	338	28	668	5055
Breeding pigs sows/boars	405	41	3	53	502
Fattening pigs (incl. barren sows)	3616	297	25	615	4553

Source: https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june accessed 26 February 2021 from UK annual time series spread sheet- section country splits

5 Scotland

30. The commercial Scottish pig industry can be divided into two main sections: One commercial integrator consists of 25,000 sows with weaners moving south from the breeding farms to rearing sites with the majority finished in England. For the rest of the industry with between 25 to 28 thousand sows there are only 2 or 3 outdoor producers with others mainly farrow-to-finish indoors. There are around 60 businesses covering 200 farms. A business is most likely to have 3 or 4 farms.

31. There are around 13,000 small holders who have small numbers of pigs accounting for 1 or 2 movements of pigs in a year. 700 of these individuals have been surveyed and they are aware of legislation, movement documentation and the health aspects of keeping pigs. They are not considered a disease threat. Around 90% of the 13000 are non-commercial who would struggle to meet the QMS standards but this is not of concern to them as typically they raise a few pigs for Christmas.

6 Wales

32. 1973 was the last year when over 200,000 pigs were recorded in Wales. Since then, the number of pigs has declined to fluctuate between 20,000 and 30,000. Market forces have meant that pig production is not economically viable for many businesses. Farming facts and figures for 2019 published by the Welsh Government indicated that in 2018 there were 23,200 pigs in Wales of which 3,400 were breeding pigs. By June 2020, 28,000 pigs were recorded in Wales with 3,000 breeding pigs and 25,000 fattening pigs. The map at figure 1 suggests that many of the holdings in Wales are small commercial, hobby units or pet pig owners.

Source Welsh Government: https://gov.wales/sites/default/files/statistics-and-research/2019-07/farming-facts-and-figures-2019-492.pdf accessed 7 April 2021

7 Conclusions and recommendations

33. As can be seen from this report the pig movement' databases in England and Wales and Scotland can currently provide the best coverage of the entire pig population of GB. Unfortunately, there is no accurate and up to date information on the number and size of holdings with pigs in GB.

34. The current legislation is inadequate as it only collects a negligible amount of information about the holding and the category and number of pigs being kept.

35. The detailed analysis indicates that 72.1% of the identified holdings were probably pet pig owners or hobby farms and 14.4% were small holdings based on movements. Whilst this may not reflect the true picture due to owners ceasing to keep pigs there is an increasing trend for an increase in leisure pig keeping with small holders, hobby farms and pet pigs. Unless these owners register, they will not be identified in any system. In the case of pet pig owners, they may not move pigs and consequently would not be identified by an analysis of movement records.

36. It is clear that accurate up to date information on holdings, locations, categories of pigs is required and that this will only be successful if all pig owners are legally obliged to update their information annually as occurs in the sheep industry. Full details and recommendations covering these points will be found in chapter 5 on records and registration and in chapter 10 on electronic livestock movement databases.

Chapter 4: Supply chain

1 Introduction

1. Many of the issues raised in this chapter will be dealt with in subsequent chapters. This chapter provides an overview of the commercial pig sector as well as the non-commercial sector consisting of small-holders, and pet pig owners. Most of the commercial and non-commercial pig keepers will have mixture of indoor and outdoor pigs. The haulage industry is also reviewed briefly as transport has the potential to spread disease very widely if the cleanliness of the vehicles is not to very high standard. In most cases the destination of pigs in the supply chain will be to the abattoir. Consequently, the abattoir plays an important part in the chain both in terms of producing the meat but also the identification of the pigs so that tracing would be possible from the abattoir to the last holding on which the pigs had been resident.

2. The GB pig industry supply chain has become increasingly integrated over recent years. Defra figures show that there were 10,500 commercial holdings with pigs in the UK (Defra 2019 statistics June census for UK) and that 1400 of those holdings have 1000 or more pigs. Over 95% of pigs moving to slaughter originate from Red Tractor assured units of which there are 2200 Red Tractor member pig sites in GB. This includes 3 major fully integrated companies (Cranswick, Karro and Pilgrim's Pride) who account for around 28% of the sows. The integrated companies with a number of the larger commercial enterprises own around 40% of the sows. Many of those mid-size businesses will have contracts with the major processors but won't necessarily be contracting for them – i.e., they will still own their own pigs but be contracted to supply various processors.

Source Defra 2019:https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june accessed 21 February 2021

3. As shown in Chapter 2 all supply chains will consist of breeding and weaning, rearing and finishing operations with the structure of these units varying between businesses and dependent on land and building availability, environmental factors and proximity to an abattoir. A combination of expansion and acquisitions have resulted in the formation of integrated but geographically diverse supply chains, with a large number of movements between different components of the chain spanning England, Scotland and Northern Ireland.

4. The way in which the supply chain is structured varies between businesses. Some are fully integrated, owning all land, buildings, pigs and abattoirs with others utilising contract finishing operations, owning the pigs on land that is owned and managed by a third party. This is supported by in-house and private veterinary support from veterinary practitioners associated with the Pig Veterinary Society.

2 Breeding companies

2.1 Overview

5. The majority of pig genetics in GB are supplied by 3 companies with high health status nucleus and multiplier herds. One company relies on elite herds elsewhere in the world to provide the great grandparent stock to their multiplier units in GB. The other companies provide the great grandparent lines to supply grandparent stock to multiplication sites to produce hybrid gilts for

commercial sale. Surplus boars are usually sold as weaners through marketing groups or grown to slaughter weight.

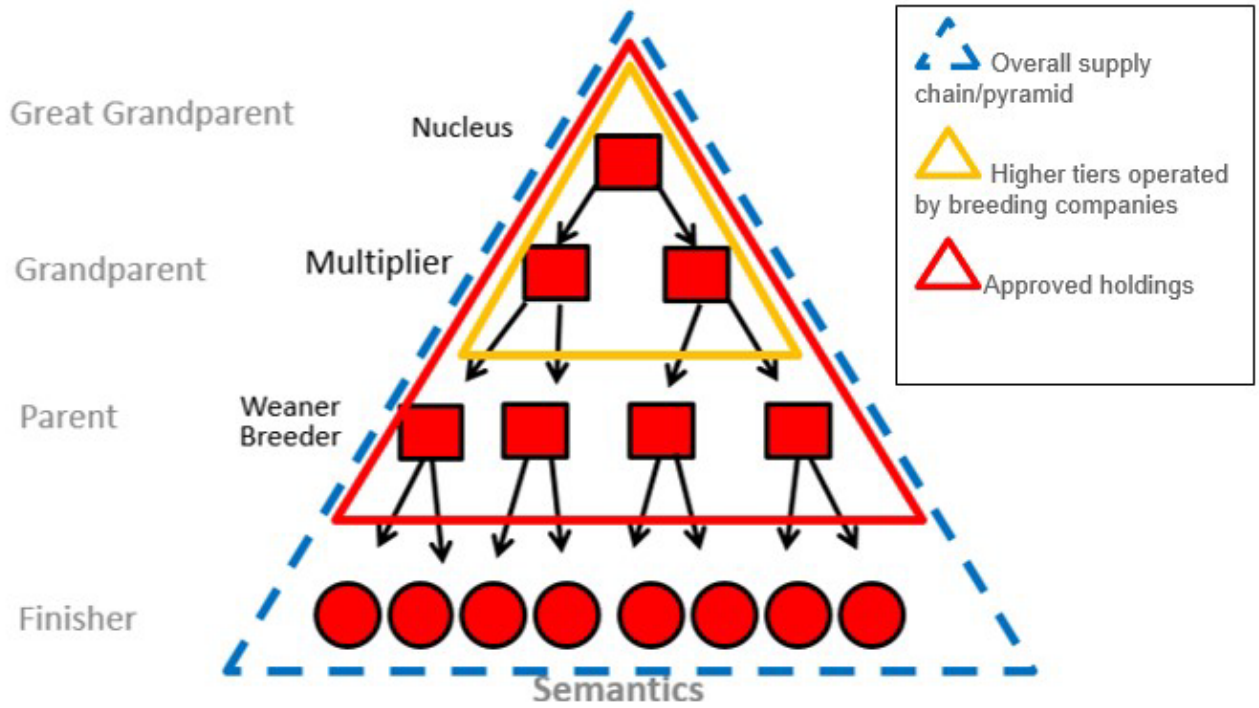
6. Weaners from multiplication units may in some case be sold direct to customers but in others weaners will go to rearing and then to grow out sites and finally to customers. In some cases, the gilts will go to Gilt mating units if customers require pregnant gilts. Management systems vary but for companies operating on a weekly continuous flow system, an exemption to the 20-day standstill is essential to ensure they can respond to customer requirements for replacement gilts.

7. Production of breeding stock is split between indoor and outdoor systems across England and Scotland with a net downward flow of pigs through approved pyramid structures. At each level, successive selective breeding occurs to yield desirable characteristics at the 'finisher' stage. Gilts that do not make selection at this point are reared to slaughter weight.

8. Identification arrangements vary with breeding sows ear tagged, sometimes with one electronic tag used for management purposes and one standard identification tag. Other companies use tattoos and tags but a number are considering electronic ear tagging with some investing in trials on the use of high and low frequency ear tags. Further work is needed to refine the technology.

9. The breeding companies operate within their own pyramid with the nucleus and multiplier herds in the top tier. Pigs move down the vertical structure which is shown in figure 4. The frequency of movements is not compatible with the concept of the 20-day standstill regulation and so exemptions are permitted through PRIMO.

Figure 4 Standard structure of an approved pyramid (Source APHA)



10. The holdings depicted in the red triangle of Figure 4 are approved as part of the pyramid. This permits movements onto a holding lower down the chain without imposing the 20-day standstill of the recipient. The risk is that any disease incursion could rapidly ‘follow the arrows’ down to the other holdings. Mitigation is ensured through the conditions of approval by APHA:

2.2 Challenges

11. Genetics has become a global business with some of the elite dam and boar lines bred overseas and imported to the UK. Breeding boars, sows and gilts have previously been imported from Europe, USA, Canada and Ireland. Although UK left the EU on 1 January 2021 imports from the EU have continued. Currently pigs are allowed to go straight to their destination without the need for movements via a Border Control Post (BCP) at GB borders. It would appear that imports via a BCP will be required from July 2022. It is currently unclear if this poses significant challenges to the future supply of breeding stock.

12. The industry has undergone considerable consolidation over the past 20 years, and this is likely to continue in the future with more worldwide partnerships. There is a rapid development in the field of genetics and this and other technological advances could have a major impact on pig production. The future supply of breeding stock and genetic material will be significantly disrupted if trade with the EU is not restored. Industry is reliant on Defra negotiations regarding the installation of BCPs to facilitate this.

13. Currently the BCP for pigs transported by aeroplane is at Stansted airport. The procedure requires pigs to be unloaded for inspection before onward transport to the isolation unit. This is a biosecurity concern. The need for unloading of animals at BCPs could also be reviewed, as all imported stock is transported directly to APHA approved isolation facilities, it could be possible for inspection to take place there, removing the need for animals to be unloaded at entry.

3 Integrators

3.1 Overview

14. Approximately 28% of sows (Defra, 2019) are owned by three large integrators with dedicated abattoirs and retail supply chains. They have a split of indoor and outdoor production with approximately 3% of their pigs bred, reared and finished outdoors. Unit size varies depending on system and ranges usually from approximately 500-1600 sows with some herds of around 2,000 sows. Gilts are sourced from one of the three major breeding companies, (Rattlerow, JSR and Genus/PIC) providing breeding stock through APHA approved pyramids.

15. Each of the three major integrated businesses operates their own dedicated breeding, growing, and finishing sites with a mixture of their own pigs and contract finish operations across the country and into Scotland. Acquisitions are managed differently between companies, some operating each as a separate business, operating as a pyramid with dedicated breeding stock, staff, feed supplies, buildings, veterinary support, biosecurity protocols and haulage. Others are more interrelated depending on retail contract and geography.

3.2 Challenges

16. The industry view is that supply chains will become more integrated with some small to mid-size operations continuing to supply local markets. The bigger impact will be on the middle

group of businesses who will find it increasingly difficult to obtain a reasonable price for their pigs. Many will align with processors to provide security for their business with a guaranteed income.

17. Some businesses are conscious of expansion to other geographical areas because of their commitment to keeping transport times to a minimum. Expansion within local geography continues to be an objective where land allows. Abattoirs also run at near to close capacity and this would need to be addressed in line with any herd expansion.

18. There are mixed opinions on the expansion of outdoor production. Increasing consumer interest in welfare may encourage further investment but this is also reliant on the availability of suitable land. Many arable farmers are looking for alternative land uses due to reduced cropping options; pig production is a viable offering here. Availability of suitable land is an ongoing issue. This includes suitable soil for expanding the outdoor operation, planning permission for new buildings and in locating areas clear of other pig enterprises. Planning permission is not currently required for the farrowing arcs and tents as these are movable but is required for any buildings and for items such as feed bins which are fixed to a concrete base

19. Haulage is a major weakness within the supply chain. Many hauliers have left the industry, it is an ageing work force and moving livestock is considerably less popular than other goods. Better communication with allied industries is also essential to ensure hauliers of feed, supplies and deadstock collectors are aware of their role in disease prevention.

4 Medium sized commercial production

4.1 Overview

20. Enterprises vary in size, usually consisting of one or more weaner breeding units each with anywhere between 500-750 sows. A number of the larger enterprises may have up to 10,000 sows on breeding units, the number of which may vary depending on their production systems. In some cases, the weaners will be reared on the same site as the breeding herd with rearers moved off to a finishing unit on a separate holding in other cases a farrow-to-finish regime will be operated. A small number of large independent companies will sell finished pigs via direct contracts with a retailer. The majority of the others are contracted to the 3 main processors (Cranswick, Karro Food Group and Pilgrim’s Pride) rather than retailers. Marketing groups will place around 50% of the available pigs with processors and they manage contracts for their farmer clients.

21. To allow for flexibility, these enterprises may have PRIMO weaner-breeder or weaner-rearer approval to allow an exemption to the 20-day standstill where units operate a continuous flow system with sows farrowing weekly. Pigs are added to and removed from the facilities continuously. Batch farrowing involves establishing a group of sows which are synchronised to farrow over a very short period with the entire group being weaned on around the same day. Feedback from the industry suggests that some of the enterprises in this category would routinely operate on a three weekly batch system, not requiring the 20-day exemption. For some producers to have approval for the standstill derogation is an important contingency plan should their system of movements on to the holding need to be modified.

22. Breeding is usually through AI from semen purchased from one of the three key genetics companies along with chaser boars. In order to supply Red Tractor assured farms, boar studs are farm assured to Red Tractor standards, as an essential route to access the commercial retail market.

23. The number of independent enterprises has reduced substantially in recent years due to rising costs of production, legislation and a decreasing pig price. Many producers have shifted their production to contract finishing for the larger integrators which offers them more long-term security through direct contracts. A smaller number of independent enterprises still exist with either their own direct route to market or via marketing groups

4.2 Challenges

24. The current structure of the supply chain means that the large integrators have a significant influence on the price of pigs. This can result in lower prices and potential for this to continue as more units take up contract finishing opportunities. Integration may offer more long-term stability. It is expected that the numbers of medium sized enterprises will continue to reduce with more alignment to the integrators especially as this offers more long-term stability.

25. The availability of hauliers and the variation in biosecurity practises is a significant threat to the industry. Further work on haulier traceability and lorry wash facilities is underway.

26. Investment remains a challenge, improving buildings or processes to reduce emissions and carbon footprint, and improve biosecurity and conditions, is costly and can have a big impact on small to medium sized businesses.

5 Small scale commercial production

5.2 Overview

27. Usually these are farrow-to-finish enterprises with anywhere between 50-400 sows, often producing pork for smaller retail outlets, butcheries, farms shops and the hospitality trade. Breeding is usually through AI purchased from one of the major pig genetics companies, along with chaser boars although in some cases they may purchase boars for breeding. As breeding through to finishing is typically on one site, there is no requirement for PRIMO exemptions to the 20-day standstill apart from when replacement gilts or boars are introduced.

28. Many of the enterprises will be farm assured to Red Tractor standard, but it is not always commercially viable, nor a market requirement for those with a smaller number of sows.

5.3 Challenges

29. Increasing integration of the supply chain has resulted in a more challenging market, which is becoming less sustainable for small independent businesses. There is an increasing divide between smaller operations and large corporate companies.

6 Rare breeds

6.1 Overview

30. The UK has 11 native pig breeds considered to be rare and at risk of extinction. Replacements are sourced from breed clubs, BPA website or through word of mouth from others in the community. The BPA maintain a herd book consisting of 14 rare breeds including their bloodlines, location and the number of sows and boars. This is updated annually through a member’s survey.

31. Pigs used for breeding in the BPA herd book have been checked to ensure the standards are met. Many have APHA approved isolation facilities, particularly those who show their pigs and these are inspected when the unit is set up, either by the producers own vet or APHA. Most units consist of 2-3 sows with a small number of larger herds. Offspring are kept for fattening or sold as breeding stock probably through rare breed sales at a market.

32. Finding abattoirs can be a challenge in some areas and this may result in longer journey times to slaughter. The BPA have a partnership with charcuterie producers for sows and boars which pay a premium price. Most units are not run as commercial enterprises; producers often just try to cover their costs.

33. Pedigree herds will ear tag all their stock to provide the herd mark and animal ID. Breeding pigs are also tagged with the same information, some breeds will also have a tattoo or ear notch. Movements are recorded on eAML2 and feedback suggests that the system works well. Slap marking coloured pigs is a problem (for non-pedigree breeders) and ear tagging a sow instead can be difficult.

34. The BPA and Rare Breeds Survival Trust (RBST) provide a communications platform to ensure that key information around policy and disease prevention is disseminated to smaller scale producers.

6.1 Challenges

35. Some rare breeds, including Mangalitsa and Landrace are imported but this has been put on hold due to complications from the EU exit. The BPA can no longer keep the herd book for the Republic of Ireland under EU rules, as the UK is not permitted to run extended breeding programmes for the EU.

36. Communications with non- members is one of the most significant challenges for the BPA and RBST and this is where there maybe compliance issues.

37. There is a shortage of veterinary expertise. Veterinary inspections for all pig owners are a good idea, but there is a lack of vets in general practice with pig knowledge.

7 Non-commercial pig sector

7.1 Overview

38. The British Pig Association (BPA) is the main communications platform for the non-commercial pig sector. There are approximately 800 breeders registered with the BPA, 4028 sows and 1028 boars. The organisation provides guidance on legislation, showing, disease control, protection of rare breeds and biosecurity as well as representing the views of small-scale pig producer members.

39. Units with 1-50 sows would usually be considered as small-scale producers, with the whole production process occurring on one unit. Producers may fatten a couple of pigs for their own consumption or for farm shop businesses and local butchery contracts. The BPA encourage veterinary engagement although it does not usually pay for units of this size to be farm assured. Small scale producers usually use their own haulage as there is limited need for the transport of pigs other than for boar sharing at breeding or transport to slaughter.

7.2 Challenges

40. The true number of small-scale pig producers is unknown as not all are registered or members of BPA. Again, this presents a communication challenge and concern around knowledge of disease prevention and biosecurity.

41. There is no system to register or de-register each year and so as small-scale producers are likely to make few movements there is no reminder to update their information. Ideally, any future movement system will include a method for identifying smaller scale production systems and pet pig keepers along with an annual registration process so that the database is kept up to date.

8 Pet Pigs

8.1 Overview

42. The number of pet pigs is largely unknown due to increasing online outlets. The standard of record keeping varies by the business supplying the pet pigs with many outlets aware of the need for registration and recording movements. Others are less so and it is challenging to establish a communication channel with these groups. Where keepers are engaging with a vet, compliance with having a registered holding, recording movements, and adhering to legislation is generally good.

8.2 Challenges

43. A major challenge is a failure of pet pig owners to register as keepers and as a consequence there is no means of contacting them. These keepers may not be engaging with vets and could be missing guidance on legislation, biosecurity and disease prevention. This also applies to those selling pet pigs which if they are not registered makes it is increasingly difficult to apply the legislation.

9 Abattoirs

9.1 Overview

44. In 2020, UK slaughter totalled 10.92 million head, 0.6% (61,300 head) more than in 2019 (AHDB, 2021.) The number of abattoirs slaughtering pigs has declined over time as many smaller plants have stopped trading to be replaced by fewer larger ones. In 2020 there were a total of 103 abattoirs processing pigs with 14 dedicated pig plants, processing over 90% of the total pigs. (AHDB, 2019.)

9.2 Challenges

45. The cost of exporting product to Europe has increased by up to 50% in some cases. Additional Export Health Certificate requirements mean additional veterinary costs combined with increased paperwork. An example of a single product load requiring 36 stamps on 16 pages of paperwork was given.

46. The Defra transport consultation could cause issues if the proposed changes on distance are adopted. Although the main integrators have multiple regional abattoirs for processing finished pigs, this is not the case for cull sows and so journey times can be longer.

47. The current eAML2 system works well but better linkages are needed with the systems in the devolved nations. Moving to an electronic system to upload and record export health information would be a major time and cost saving operation. The new Livestock Information Service must address this without losing the current functionality of eAML2.

10 Hauliers

48. This section has been included as hauliers pose a potential risk of disease spread if vehicle and personal biosecurity is inadequate due to the integrated nature of GB pig production. Feed supplies, movement of pigs and deadstock collection are provided by relatively small number of specialist suppliers. Biosecurity of these vehicles is critical in preventing a disease incursion or minimising spread in the event of an outbreak. Modelling work carried out by EPIC suggested that ASF virus could take time to spread within a herd and be circulating for several weeks before a substantial increase in mortality was observed. As a consequence, ASF could remain undetected for some weeks in the herd. (EPIC 2018).

49. Further modelling work by EPIC based on eAML2 movement data of pigs alone, suggested that by the time the index case of ASF was detected, the virus was likely to have been spread widely across the country. The results of this study suggest that it is difficult to generate an epidemic within the pig industry in GB via direct pig movements alone, whereas haulage by itself has the potential for spreading infectious diseases within the pig sector. (EPIC 2019)

50. Many large companies will have agreements with feed mills and other commodity suppliers to ensure that specific vehicles and routes are allocated to deliver to their business to prevent cross contamination. Where this is not the case, the level of biosecurity is dependent on the relationship and level of communication between farmer and supplier.

51. A small proportion of businesses supply their own fleet of vehicles to allow full control over movements, journey length and biosecurity. This is of considerable cost and can present logistical challenges due to standstill periods and requirement for pig clean days. For disease prevention purposes, units within the same supply chain are often geographically diverse. This would potentially allow parts of the supply chain to maintain disease freedom and continue to operate in the event of a significant disease outbreak. This means it is often of commercial and disease prevention benefit to contract haulage work out to companies within the same geographies as units rather than making extensive journeys as part of a national contract.

Chapter 5: Records and registration

Key Findings

1. A pig owner has to register with 3 separate organisations in order to comply with the current legislation.

2. Details of the pig owner and their holdings is held in 3 different databases for English and Welsh owners and further databases in Scotland for Scottish owners.

3. The use of Temporary Land Associations within 10 miles although based on epidemiological units can pose an important risk if disease is introduced into the main holding or subsidiary land and can spread between them and to other farms in both the neighbourhoods. Other issues include multiple land parcels under one CHP number.

4. The current legislation is inadequate as it only collects a negligible amount of information about the holding and the category and number of pigs being kept. An accurate overview of the pig holdings in GB is difficult to obtain.

5. Whilst there are legal obligations on pig owners to inform APHA when their situation changes, or they cease keeping pigs it would appear that this is not always the case and de-registration does not always occur.

6. There is an obligation on the owner keep an annual record of pigs on the holding, but the information is not readily available or recorded centrally. Unlike the sheep industry there is no obligation to report the numbers on an annual basis.

7. More detailed information on holdings will be needed for the England Animal Health and Welfare Pathway although this will only be a requirement for those who sign up to the Pathway voluntarily.

8. The PHWC produced a list of top questions which should be answered as part of an annual census.

9. The new Livestock Information Service for England will replace eAML2 in due course.

1 Introduction

10. The accurate recording of the numbers and location of pigs is an essential component of any disease control contingency planning. When urgent action is needed to control disease outbreaks the rapid availability of the location of pigs and their holdings in any given geographical area is essential for successful control. As shown in previous chapters the accurate recording of pig herds contributes to surveillance and analysis of the demographics of the pig industry.

11. There are a range of new developments in England. These include the proposed voluntary Pig Animal and Health Pathway, the Livestock Information Service and the recommendations from the Pig Health and Welfare Council.

2 Current requirements

12. Holdings are defined in PRIMO as “any establishment, construction or, in the case of an open-air farm, any place in which pigs are held, kept or handled”. This will include pet pigs, hobby farms and any other place where pigs are held such as zoos, pet shops, city farms, and rescue centres.

13. At present Part 2 Article 4 of PRIMO requires

> (1) An occupier of a holding who begins to keep pigs on that holding, and any person who takes over the occupation of a holding where pigs are kept, must notify the Secretary of State within one month of—
>
> > (a) their name and address; and
> > (b) the address of the holding.
>
> (2) On receipt of a notification under paragraph (1) the Secretary of State must issue a herd mark.
>
> (3) The occupier must notify the Secretary of State of any change to the information in paragraph (1) within one month.
>
> (4) The occupier must notify the Secretary of State within one month if they cease to keep pigs at any holding notified under paragraph (1).

14. Once a year the owner must record the number of pigs on the holding on that day and also the number of pigs normally kept on the holding. The records can be kept on a computer or on paper for three years after stopping keeping pigs

3 Registrations of premises

15. Before an owner starts to keep pigs on a piece of land no matter whether it is a farm, paddock, or domestic residence the land must be registered. The owner must have a CPH number to keep pigs as part of a business or as pets. The CPH number is obtained from either the Rural Payments Agency in England, the Rural Payments Agency Wales (RPAW) or the Rural Payments and Inspections Directorate (RPID) in Scotland. A livestock business may have more than one holding and CPH number. In the case of pet pigs the CPH number might be issued for a house or flat depending on where the pig is kept but at that time no assessment is made as to suitability of the premises or the ability of the owner to look after health and welfare of the pet pig(s).

16. An added complication is that a single livestock holding can cover the land and buildings within 10 miles. A temporary land association (TLA) in England associates the permanent CPH with land or a building that’s within 10 miles of that CPH’s main livestock handling area. The land or building will be treated as part of the permanent CPH it’s associated to which means that the owner does not need to record or report livestock movements between that land and the rest of the CPH nor will the standstill requirements apply when moving livestock between that land and the rest of the CPH. This arrangement is based on the concept of epidemiological unit but the disadvantage is that infection in one part of the holding can easily spread to another part of the holding up to 10 miles away with major implications for spread as well as a lack of records about movements back and forth between the different parts.

17. Having registered the land the owner must then apply to the APHA within 30 days of the pigs arriving on their property in order to obtain a herd mark. The herd mark will consist of 1 or 2 letters followed by 4 digits e.g. A1234 or XY9876. Any change in circumstances such as adding new land with a different CPH number or stopping keeping pigs must be notified to APHA.

18. Before moving pigs on or off a holding the movement must be notified to the eAML2 in England and Wales and to ScotEID by registering on relevant website or by calling or writing to the specific information centre.

19. The details of the owner, the geographic location of the pig holding, the herd mark and the movement information are held and often duplicated on 3 different databases in England and Wales and entirely different databases in Scotland. Each of the databases holds some common information but may contain information unique to a single database and not available to the others. This can pose difficulties when data are not compatible between the various parts of GB.

20. Scotland has similar requirements to England including CPH and all units regardless of size are registered with ScotEID. Scotland uses slap marks, but the numbering is different to the English system, a two-digit slap mark linked to the farm name is used. This makes it easy for identification at the abattoir and the slap mark is not too long on the pig's shoulder. A single slap is applied to the left shoulder of each pig when loaded into a lorry, this is sufficient from a practical point as pigs do not stand still to be slapped a second time as well as from a welfare angle. Abattoirs will only accept a pig with a movement licence.

4 Enforcement

21. The legislation assumes that once registered any changes will be notified to APHA and more importantly once pigs are no longer kept the holding will be deregistered. In practice it seems possible that a minority of owners do not to report the changes required by legislation which could be difficult to enforce. Enforcement of the legislation is mainly the responsibility of the Local Authorities but in practice it can be difficult in times of budgetary constraints, particularly in terms of staff resource. APHA are not well resourced to proactively follow up on registration issues.

5 Pig Health and Welfare Council (PHWC) 10 Top questions

22. Membership of the PHWC includes representatives from government, the industry and individual pig producers as well as observers from Scotland, Wales, and Northern Ireland. One of the issues debated by the group was the lack of basic information available on pig holdings.

23. The group concluded that "There are several basic features of pig units which, if recorded systematically for all units, would be of benefit to the pig industry and Government and its Agencies for a number of reasons listed below.

i) know what units are active i.e. keep pigs allowing "cleansing" of eAML2 database
ii) assist disease outbreak investigations – notifiable and other to identify risks, prioritise tracings and guide surveillance
iii) provide better information for pig population demographics and monitoring changes over time
iv) improve intelligence for small pig units

v) allow targeted messaging to certain unit types/sizes. Certain responses could prompt relevant advice to pop up or be sent by automated email. Additionally, when a disease situation arises, the database could identify priority units to target for specific advice.

24. The outcome of the discussions was a universally agreed list of questions which could be incorporated into an annual census of all pig keepers. It is possible that some of the information is already held in the Pig Hub at AHDB Pork or could be extracted from other databases.

25. It was recognised that unit identification, data confidentiality and use of the data would have to be discussed in detail and then communicated clearly at the outset of any process. The information could be collected via an annual census through eAML2 or any replacement movement database although funding would be required.

6 Animal Health and Welfare Pathway in England

26. The Animal Health and Welfare Pathways for cattle, sheep and pigs in England are seen as a ministerial priority as a major part of the Future Farming Strategy. The proposals for the English pig health and welfare pathway have been developed by the Pig Pathway Project Group comprising both government and industry members. The project group produced a detailed proposal for the Pig Pathway which. Defra and industry will develop into delivery and business plan for the project, whilst engaging with wider industry on the benefits of the plan. The aim of the Pathway will be to: -

- gradually build a picture of the health and welfare of our national herd and flock
- help farmers to control endemic diseases and conditions across England
- support the production of animals to higher health and welfare standards

27. The first step of the Pathway which is due to launch in spring 2022 will be the Annual Health & Welfare Review carried out be a vet. Pig keepers participating in the Annual Health and Welfare Review will have to provide some data, which may include production system data based on the PHWC Top 10 questions.

28. There is a significant number of small-scale producers, many of whom receive little or no training or interaction with a vet. They are hard to reach, and the Pathway is an opportunity to engage with them and as success of the Pathway will rely on high levels of participation across the entire sector for example, in endemic disease control programmes.

7 Livestock Information Service in England

29. The Livestock Information Programme (LIP) will deliver the service known as the Livestock Information Service (LIS) is a new multi-species livestock information, identification and tracking system. This will replace the existing ageing statutory livestock traceability services for cattle, sheep, pigs, goats and deer (BCMS, ARAMS and eAML2). It will collate, manage and safely share the data associated with animals from birth to death. It will operate throughout England but be compatible with equivalent services in Scotland (ScotEID), Wales (EID Cymru) and Northern Ireland (APHIS > NIFAIS) to ensure seamless movement of livestock across the UK. At present eAML2 includes England and Wales but in the future Wales will be covered by EID Cymru.

30. LIS is intended to cover the three species but yet the detail that will be collected and held for the pig industry is unclear. Legislation is likely to be required to enable LIS to collect information

on holdings. It would be appropriate in the circumstances if the registration of pig holdings could include the information defined in the 10 Top questions provided by the PHWC.

8 Conclusions and recommendations

31. The current legislation is inadequate as it only collects a negligible amount of information about the holding and the category and number of pigs being kept. Apart from a requirement for the owner to record the number of pigs annually there is no legal obligation for that information to be notified. Consequently, there is no accurate view of the pig holdings in GB especially in England and even at a basic level of whether they still exist is difficult.

32. This is unlike the sheep industry where the Statutory Sheep and Goat Inventory was introduced in December 2005 and requires respondents to supply the number of sheep and/or goats that they have on the 1st of December in England. This can be done on line. As a result the relevant sheep and goat dataset is revalidated each year.

33. The facility for the owner to use a Temporary Land Association with potential sites up to 10 miles apart could pose a potential disease risk and makes it difficult to trace pigs effectively. Furthermore, the presence of pigs at that distance from the main holding would not show up in the database thereby jeopardising the rapid delineation of risk to other pig holdings. Similar issues arise with permanent land parcels within 10 miles which are under one CPH number. The distance should be reviewed with the possibility of it being abolished or reduced to 3km to mirror the protection zone which would be imposed in the event of an outbreak of notifiable disease.

34. The recommendations by the PHWC for an annual census involving online submission of answers to the 10 top questions covering key features of pig premises would help. This would alleviate the problems caused by a lack of information.

35. Enforcement is primarily the responsibility of the Local Authorities but in times of budgetary constrain this can be difficult.

36. Improvements are required and include:

- Need a system where owners are legally obliged to update their information annually
- Need accurate up to date information on holdings, locations, categories of pigs
- Need a system where more detail of the owner's situation is developed using the Top 10 question devised by the PHWC

Recommendation 1: Revise the current legislation to make it a legal requirement for all pig owners to register and reregister pigs on an annual basis.

Recommendation 2: As part of the legal registration process the information required from all commercial pig owners should include the details listed in the Top 10 questions outlined in the report from the Pig Health and Welfare Council.

Recommendation 3: As part of the registration process for pet pig owners, hobby farmers, city farms and small holders there needs to be some assessment of the suitability of the owner and premises to keep pigs (e.g., no pigs in blocks of flats). The information required should be less than that for the commercial holdings but include that currently collected by APHA and those sections of relevance from the Top 10 questions when issuing the herd mark.

Recommendation 4: Develop an online system to enable owners to enter their registration details, record their annual pig numbers and modify their information as necessary. Link the system to the existing eAML2 in England or its replacement in due course.

Recommendation 5: Design a system that is compatible with LIS. Potentially merge into LIS the RPA, Defra, and APHA animal related registration systems, creating a one shop stop with all of the data in one place or alternatively set up a hub which can bring information together.

Recommendation 6: Ensure all databases must be able to transfer information seamlessly, accurately and in a compatible format. This is critical with eAML2 and ScotEID and even more so with proposed development of the LIS in England, EID Cymru in Wales and the changes to ScotEID

Recommendation 7: Further review the use of the Temporary Land Association for pig holdings to assess risk and whether the distance should be reduced to 3km taking into account potential issues for outdoor pig units. (See also Chapter 5 paragraph 16 and 33)

Recommendation 8: To ensure pet pigs are registered satisfactory on going recording or registration is required. This should be focusing on education and raising awareness via publicity and contacting those selling pigs especially via the internet.

Chapter 6: Identification

Key Findings

1. The traceability of pigs is important for a number of reasons, disease control, food safety, consumer confidence and to assist with management practices.

2. Effective traceability requires the identification of pigs throughout their life cycle.

3. Current legal requirements for identification specify either an ear tag or tattoo apart from pigs less than 1 year moving from farm to farm when a temporary mark is acceptable.

4. Identification is an ongoing challenge in the pig industry.

5. Slap marking is considered effective, but an alternative would be preferred.

6. Scottish slap marks are a different length and formation to English marks which can cause difficulties in transferring information between the 2 systems.

7. A number of alternatives exist for the identification of pigs including, mainly electronic tags but also microchips, bar codes and the possible use of DNA.

8. A number of trials have been carried out using electronic tags which showed they could survive the early abattoir environment and could demonstrate individual pig traceability from abattoir to farm of birth.

9. There is a legal requirement for lambs to be electronically tagged with LF tags before they leave the holding of birth. Markets and abattoirs are set up to use LF tag readers for the identification of sheep.

10. In the commercial sector the solution to individual identification from holding of birth to slaughter could be electronic ear tags unless alternatives such as the use of DNA or facial recognition could be developed.

1 Introduction

11. Traceability of pigs is critical for many reasons but primarily the protection of animal and public health. It also responds to consumer concerns by providing assurance as to the origin of their food and enabling the provision of invaluable management information to producers. Farm to fork traceability is important in all these areas and depends on the ability to identify and trace either individual or batches of pigs. In an ideal world there would be an integrated chain where a single individual pig or piece of pork could be traced back from a slaughterhouse via any other farm on which it had been resident from birth.

12. From the perspective of this review the ability to track diseases is important. There must be an effective method of tracking pigs when groups from different sources mix for example on farms and through markets, and shows where there is the possibility, they can pick up diseases and spread them widely.

13. One of the requirements for the export of pigs, meat or meat products is the provision of export certification. This often involves confirming the disease status of the farm of birth which requires an effective and reliable traceability system.

14. The provision of accurate production information to producers would also rely on effective traceability. Monitoring individual pigs from weaning to slaughter has the potential to provide comprehensive information for management purposes.

15. The Ear Tag Allocation System (ETAS) exists as a database for approved manufacturers of ear tags for cattle, sheep and goats. This works with the ARAMS movement system for sheep, goats and farmed deer and the BCMS system for movement of cattle. It is soon to be replaced by an integrated system through LIS, known as LUIS. The system provides a unique ear tag number for each animal, as per the Defra keeper's guidance. The large number of pigs being moved each week mean that it is unlikely that this system could be extended to pigs in the near future.

2 Current requirements

2.1 Background

16. New rules for the identification and registration of pigs came into force on 1 October 2011. These changes are affected by European law (Council Directive 2008/71/EC) and were intended to improve traceability which would allow the management of a disease outbreak more effectively. The new rules were implemented and enforced by the separate Pigs (Records, Identification and Movement) Orders 2011 for England, Scotland and Wales. (PRIMO)

2.2 Currently approved methods for identification under PRIMO

17. Currently there are two methods available which can be used to permanently identify pigs. These are ear tags or tattoos. Tattoos may be in the ear or on both shoulders by using slap marking equipment. In Scotland slap marks are only required on one shoulder.

2.3 Identification requirements for moving pigs

18. Pigs under one year can be moved with a temporary mark if it lasts until they reach their destination. It must ensure that the holding from which the pig was last moved can be identified either by the mark or by the accompanying documents. This only applies to the movement of pigs from farm to farm.

19. Apart from the temporary marks allowed for pigs under 12 months for farm-to-farm movements, all other pigs must be permanently identified by the official herd mark for that holding using an ear tag or a tattoo before leaving the holding. This includes the animals in section 20-21 below.

20. All pigs moving to slaughter and any pig over one year old and moving anywhere must be marked with a slap mark, ear tattoo or ear tag with the despatching premise's official herd mark. All pigs, regardless of age, moving to a market are required to be permanently identified, with the herd mark regardless of whether their onwards move is to slaughter or another holding.

21. A unique individual identification number in addition to the herd mark is required for any age of pig moving: -

- to a show or exhibition,
- for breeding purposes with the intention of returning the pig to the holding from which it was moved
- for the purpose of collection of semen at a porcine semen centre.

22. The current legislation specifies that pigs moving for the purposes of intra-Community trade or export must have an ear tag or tattoo in its ear, in either case bearing the letters "UK" followed by a herd mark and a unique individual identification number. The legislation also specifies the identification requirements for pigs moving into GB from outside the European Union. After 31 December 2020 pigs for export or movement to the EU or NI require an ear tag or tattoo that states UK, with the GB suffix (UK-GB), the animal's herd mark and an individual ID number.

3 Tracing considerations

23. It is important to be able to trace pigs back to their holding of birth either directly or via other holdings on which they have been resident during their lifetime. In many cases for effective disease control this has to be achieved accurately over a short period of time preferably by interrogating computer records such as eAML2 or ScotEID.

24. Pigs under 12 months moving to abattoirs can be rapidly traced back to their last holding of residence by the slap mark which in a farrow-to-finish is the holding of birth. Rapidly identifying the holding of birth and any intermediate growing/rearing units could a problem if there had been mixing of pigs from various sources on the rearing and/or finishing units. With the increase in the size of rearing and finishing units producers may find it necessary to combine a number of batches of pigs from different sources into a single building in order to fully stock the unit.

25. Whilst pigs under 1 year can move with a temporary mark it is unlikely to last many days. Consequently, these animals have no specific identification in between movements until they are sent for slaughter. Any tracing back to holding of birth via intermediate holdings would have to rely on batch records held by the producer or a detailed check on eAML2 but even then, none of the pigs could be individually identified.

26. In most commercial production, pigs are reared in batches with the company or individual producer being able to identify the source of pigs in each batch by reference to their records and movements. Batches of pigs are moved from site to site within an integrated company or to different holdings owned by or under contract to an individual producer. Consequently, the information for tracing purposes will be the batch record kept by the producer.

27. Boars and gilts are likely to move on a number of occasions before reaching their final holding. In most cases the maximum number of times a boar or gilt would be 3, birth-rearer-breeding unit –slaughter. In other cases, they may move on more occasions if there are gilt mating units involved. It is unlikely they will have multiple identification marks for each holding they have been on especially as most movements would be before 12 months of age.

28. It is not practical to require a separate ear tag, tattoo or slap mark for each holding on which a pig has been resident during its life. If individual identification is required from the holding of birth the only practical solution is to individually identify the piglet at weaning with an ear tag. This would be of little value with batches of pigs as the ear tags would be difficult to read and involve handling the pigs each time. Pigs with ear tags going through abattoirs would be difficult to identify and a slap mark from the final holding would still be needed in addition to the ear tag. At present for the commercial sector the only solution to individual identification from holding of birth to slaughter would be electronic ear tags. These could be read automatically and loaded into a movement database to enable immediate tracing of individual pigs back to their holding of birth.

4 Alternative methods for identification

4.1 Electronic identification (EID)

29. In pigs a basic electronic identification (EID) system uses an ear tag which contains an embedded microchip or transponder which contains details of the animal including the herd mark and individual identification number. The electronic tag has a radio frequency identifier (RFID) which receives a signal from a device/transceiver. This is picked up by the microchip in the ear tag which in turn sends back the unique identification information to be stored on a computer, laptop or other type of hand-held device. As well as the hand-held readers fixed readers could be permanently installed on farm, on lorries and in abattoirs which could identify pigs automatically. A number of producers use electronic feeders which pick up individual pig ID from an ear tag to ensure that the correct amount of feed is available for each sow so the principle is already there.

30. Various electronic tags have been trialled. Electronic radio-frequency identification (RFID) can use one of two systems either Low Frequency (LF) or Ultra High Frequency (UHF) radio signals. There is currently no agreed standard for electronic identification in pigs with both high and low frequency RFID being used.

31. In Scotland UHF ear tags are considered preferable because they allow pig ID to be read from a greater distance from the reader. Concern was expressed by some producers that whilst UHF was faster and could be read from greater distances it was subject to interference especially with static receivers in abattoirs where more than one animal could be identified. Lowering the frequency could overcome this problem.

32. A practical issue with standard tags is having to restrain the pigs to read their ID. Compared with standard tags, untagged but slap marked pigs do not need to be restrained for identification on the basis that the slapmark is clear and the pig is clean. Similarly, EID means pigs can easily be identified and recorded in the lairage and do not need to be restrained. UHF is also used in Denmark and Holland and is likely to be accepted for future EU trade. UHF tags are also considerably lighter for tagging younger animals and less expensive. Scotland is also considering whether combined LF/UHF tags could be used in cattle and sheep.

33. If EID is to be used it will be important to show that the tags can overcome various extremes during the pig slaughter process. A trial was conducted by Quality Meat Scotland to ascertain whether the electronic chip in the tags would survive the high temperatures of the scalding and singeing processes in the abattoir. The conclusions from the trial indicated that “75% of tags made it through the slaughter process and the fact that every tag which made it through was also readable.” The research found them suitable for trial work but with only 75% retention not good enough for complete traceability.

34. An AHDB feasibility study trialled practicalities of using ultra high frequency (UHF) technology on farm by tracking performance data on a pig-by-pig basis throughout the production system. In addition, an AHDB led project entitled “The End2End Traceability and Automated Data Capture” aimed to explore the value of automated data capture using UHF EID ear tags and maternal DNA traceability in the pork supply chain, specifically in outdoor pigs. A key objective was to establish if UHF technology could deliver individual traceability through from when a pig was born to the carcase chiller. If so, could the data collected at slaughter be attributed to specific pigs and their family lines/genetics to highlight trends and characteristics producers might manipulate to increase production efficiency and improve pig quality?

Source AHDB: https://ahdb.org.uk/knowledge-library/pig-electronic-identification-device-technology-eid accessed 21 February 2021.

35. The trial concluded that UHF RFID tags could be successfully applied to piglets born outdoors and valuable individual pig management data collected at a reasonable cost throughout their life. The project analysed the cost of such a system and concluded that “the main costs of automating data capture on farm are the cost of UHF RFID ear tags, which at present are about 45p each. Hand-held ear tag readers cost about £800 and docking stations to upload the data are about £375 each. There would be some extra labour costs, but this would depend on existing farm practices and the extent of the data captured. In addition, the ear becomes unfit for consumption and is not attractive for export markets. The additional losses were estimated to be £1/pig assuming that the contamination issue was resolved.”

36. A further trial was carried out by AHDB following concern expressed by FSA in abattoirs that heat of the processing facility could cause contamination of the ears by the plastic in the tags. The tags utilised were plastic button tags with an FDX (Full Duplex) low frequency (LF) transponder embedded within the plastic. The trial concluded that the use of tags as an identifier on farm, left through the burner stage of hair removal in the abattoir had no risk of contamination to ears destined for human consumption even in extreme scenarios of low line speed and higher exposure to thermal shock.

4.2 Alternative systems for commercial production

37. There are a number of potential alternatives to electronic identification including bar codes, retinal scans and facial recognition although there is little published work on these. In one of the interviews it was reported that Denmark has been trialling facial recognition in automated lairages but that would take a lot of investment. The indications are that these alternatives would be of no practical use at present in tracing pigs for disease control purposes.

38. DNA traceability involves using sequences or markers in the DNA which are unique for each individual pig. DNA remains very stable throughout processing and is present throughout the pig supply chain. Databases containing the unique profile for each animal can be interrogated at any stage. At present DNA traceability is not of use for tracing animals in a rapidly evolving disease situation but is of value in providing assurance to retailers and consumers about the provenance of meat and meat products. For the future DNA might be useable to rapidly identify and trace pigs provided a rapid DNA test and the establishment of a central database with ease of input and interrogation could be developed. Funding would be required to develop and implement such a system although this is likely to be expensive and take time to develop.

4.3 Micro-chipping for animal identification

39. Microchipping is a safe, effective, and permanent way to identify individual animals. It has the potential to enable the tracing and identification of animals in the event of a disease outbreak. Micro-chipping is not used in animals slaughtered for human consumption as they cannot be easily removed and as a consequence may pose a risk to consumers or result in damage in the abattoir. Microchips are compulsory in dogs and voluntary in horses which must not be for slaughtered for human consumption. The downside to this is that the equine abattoirs have to scan horses to ensure they have not been microchipped. If pigs were microchipped abattoirs would also need to scan all pigs to ensure they had not been microchipped. Consequently, microchipping of commercial pigs is a non-starter. Provided there is a clear definition of a pet pig, microchipping could be considered for pet pigs as they should not be permitted to go to a slaughterhouse. Owners would need to be made aware of this and the movement database could be used to prevent licences being issued to pet owners to move the pigs to an abattoir. Smallholder pigs that go to an abattoir should be slap marked or tagged.

5 Concerns

5.1 Traceability

40. Concern was expressed by a number of organisations about the traceability of pigs from their holding of birth. Traceability is a pillar of Red Tractor (RT) where the Standards support animal health and welfare and help producers comply with legislation. Under RT pigs are required to be born and reared on RT-assured holding(s) for the whole of their life but there are weaknesses in the system. Pigs from a non-RT assured unit should not be brought onto the holding but the scheme does allow non-assured breeding stock (boars and breeding females) to be brought on, although these animals cannot be marketed as ‘assured’ when they go to slaughter as they have not been born and reared on RT-assured units for their entire life. There is an online checker to check the assurance status of a unit, which also enables historical checks to be carried out, for use by abattoirs and producers.

41. Abattoirs have systems in place to check the assurance status of supplying farms at or before intake of pigs, however there is less use of the RT Checker by farmers who tend to rely on historical knowledge of assurance status of supplying farms. However, this carries risk as farms can have their RT certificate suspended or completely withdrawn at any time. Perhaps a new standard could be added to require farms to carry out a check before moving pigs on to their unit. Traceability would be easier to verify if pigs had individual ID especially as there have been unconfirmed reports that some farms are swapping pigs and using other farms slap marks so individual ID would stop this.

42. From an APHA perspective traceability involving herd mark only, with temporary marks for pigs less than 1 year of age, until a slap mark is applied for their final journey could make rapid and effective traceability difficult. This is despite adequate records being kept internally by the company. Another potential weakness is that the eAML2 system covers individual moves between two premises, but there is no association with previous or onwards movement for batches of pigs. Certification of pork and pork products to the EU requires specific details about the holding of birth which in some circumstances may be difficult for the certifying vet to confirm.

5.2 Breeding pigs

43. Breeding pigs need to be considered individually for management purposes on commercial farms. Based on the interviews the identification methods for breeding pigs vary depending on the company, the site and the individual producer. Most commonly breeding pigs are identified using two methods. These can be single or double tagged with standard plastic ear tags or various combinations of a tattoo, single identifying ear tag or electronic ear tags. Increasingly an electronic tag and a standard tag are being used by some producers. There is also interest in using a combined electronic/DNA reader tag in one ear and a standard tag in the other ear.

44. Some companies have tried both low frequency and ultra-high frequency tags but usage is variable. In one case the UHF tags were found to be too sensitive picking up the identity of more than one pig although this was resolved by turning the frequency down to obtain an optimum frequency. Another company has developed the UHF tags and is encouraging customers to also use them and consider that the tags on groups of animals works well and can generate a tag list when the animals pass the reader. A second company is using LF tags and has fitted LF readers to the gambrels in an abattoir to link each pig back to carcass classification software.

5.3 Slap marks

45. Slap marking can be done at any age, providing the mark meets the legal requirements in PRIMO. In some cases, weaners are slap marked but it is usually finished pigs for slaughter which are slap marked although the timing may vary. Some farms slap the finishers at 70-80Kg with the slap mark growing with the pig and becoming more apparent over time. Other finished pigs are slap marked just before being loaded onto the lorry. The pigs do not like being slapped but success depends much on the skill of the operator. Red Tractor reported that for 2019 and 2020 there were a small number of non- conformances related the requirement to keep slap markers in clean and serviceable condition. These were mostly due to a failure to keep the pins clean or replace bent pins.

46. Slap marking conditions are not always satisfactory when a group of pigs are slap marked at 4.30 in the morning and they rub against each other smudging the ink nor is it always possible to ensure they all have double marks. Slap marks are not ideal as frequently they can be difficult to read or completely unreadable. However, there is an incentive on producers to ensure their stock are identifiable in the abattoir otherwise they may not be paid the correct amount for their pigs.

47. Scottish slap marks are a different length and formation to English marks, and this can cause issues when transferring data from the Scottish movement system, ScotEID to the English eAML2. There are also discrepancies in the requirements for slap marking with Scotland requiring one slap mark and England requiring two. The Scots did not have any problems identifying split carcasses in the abattoir with only one slap mark but in England the industry considered that double slap marks were necessary to track the split carcasses through the abattoir.

5.4 Ear tagging at weaning.

48. The industry was of the view that temporary marks should continue to be permitted for farm-to-farm moves of piglets less than 12 months. It was considered that the use of tags could pose a welfare problem for the piglets if temporary marks were not allowed. On the other hand, some were of the view that temporary marks were not useful as they are unlikely to be legible after

24 hours. The general view by some interviewees is that electronic identification is the future, but that technology needs refining and an agreement is needed on whether to use high or low frequency across the industry

49. Some of the major companies have trialled both low and high frequency ear tags with mixed results. Readers are installed at some of the abattoirs and currently used to link pigs back to the carcass classification software. It is also used for segregation between batches at some sites.

50. Markets have completely automated systems for recording sheep moments in and out using a mixture of fixed LF readers and hand-held devices. The data collected can then be fed directly into the sheep movement databases. Similar systems exist in abattoirs slaughtering sheep by using LF readers on the gambrels. A similar system would be practical in markets receiving and selling pigs.

51. A number of disadvantages of using standard or electronic tags were raised during the interviews. These included: -.

- Cost: if all pigs had to be identified at weaning this could be 45p/tag for over 9+ million finishers produced each year. Added costs would be for the readers, docking stations, and software.
- Labour costs of inserting the tags into the weaners
- The lack of a uniform system with some producers using LF other the UHF systems
- The ears may become unfit for human consumption and unattractive for the export market
- For Chinese exports the whole ear with a tag or a hole left by the tag would not be acceptable. Whether this would lead to the rejections of the ears or the Chinese paying lower costs was not known.
- Ear tags may become lost and retained in the scald tank although there should be mechanical solutions to resolve this problem.
- FSA were concerned about plastic tags disfiguring causing plastic contamination although this has not been shown.

6 Conclusions and Recommendations

52. Many the smaller commercial units are farrow-to-finish with the result that it is easy to track the pigs back to their origin using slap mark identification in the abattoirs.

53. The use of the temporary identification for pigs less than one year of age moving between farms had been a pragmatic acceptance that in the majority of cases these are batch movements. In that situation the origin of the pigs can be identified from the farm and movement records if necessary and the benefits of individual tagging are less tangible. However, while most diseases can be linked to the batch there will be circumstances when individual animals will need to be traced and individual ID could overcome some of the traceability challenges associated with on-farm mixing of pigs from different holdings. However, as yet there is not yet widespread agreement among the industry on the future of pig EID.

Recommendation 9: The current system has disadvantages but using ear tags and tattoos is acceptable at present. In the longer term there should be a move to electronic tagging of pigs from the time they leave their holding of birth to ensure full traceability unless the current work on DNA tracing or facial recognition can deliver improved traceability. An economic assessment of introducing electronic tagging should be carried out.

Recommendation 10: There is currently a need to include electronic identification tags as an additional and acceptable method of officially identifying pigs. Legislation should specify that tags include the official herd mark and a unique individual identification number in all cases.

54. Ear tagging at weaning could be carried out using electronic ear tags or a combined DNA/electronic tag. Individual identification throughout the supply chain would be of considerable value. The AHDB trial indicated that DNA traceability from individual finished pig carcases back to the sow (and farm) of origin was feasible by tagging piglets at weaning. The AHDB trial was carried out with a number of companies which are assessing whether to use electronic tagging. Further work is needed to analyse the EID/DNA tracking system to ensure it can provide compete traceability from birth to abattoir.

55. Electronic identification of pigs has many advantages especially if used from weaning. Providing details of the herd mark and individual identification would allow more effective, rapid and accurate tracing through the supply chain. In addition, there would be support to producers by providing valuable management information collected on farm and from abattoirs. The use of electronic tags would eliminate the need to slap mark pigs.

An additional advantage of using electronic tags relates to the potential automation of pig identification. Readers could be installed on vehicles to read the identity of all the pigs at loading. This information could be fed into the movement database meaning that each time a pig moved during the production cycle it could be tracked both forwards and backwards. This would lead to enhanced, rapid and automated traceability which is paramount in the event of a disease outbreak.

56. A number of issues need to be resolved including the RFID system to be used, updating the legislation, deciding whether electronic identification of pigs should mandatory and if so from what age of piglet. As the LF system works in the sheep industry and LF readers are likely to be used on farm, already used in markets and abattoirs it would be difficult to require a different system to be used by the pig industry. It would be preferable to have a uniform tagging system so that it is consistent across the pig industry and accepted by export markets. A major issue would be the cost to producers of tags and readers at a time when the industry is under pressure.

Recommendation 11: The issue of holes in the ears when exporting to China needs to be addressed both by dealing with the Chinese authorities but also reviewing the requirements for exports from Denmark and the Netherlands. There is a need to assess whether ears with holes would be prohibited or whether there would be a price reduction compared with ears without holes. The current trade is worth around £2.7 million (AHDB July 2021). (Since this report was written further information on exports to China has been obtained and is shown at Appendix 5)

57. In future the need to introduce electronic/DNA identification of all pigs is likely to be driven by the retail and consumer organisations to improve consumer confidence through the traceability and provenance of food back from the consumer to the farm of origin. DNA tags would enable retailers to trace individual products back to the units of origin. This is already happening with a number of commercial companies which are considering introducing electronic/DNA tracing systems.

58. If it is decided that EID in the pig industry should remain voluntary, large integrators (companies) may develop their own unique systems. In such a situation, systems that are compatible should be developed as contractors are likely to move between those companies. Additionally, the systems should be compatible with official government livestock movement databases. This would ensure that there would be an automatic system of loading individual pig official herd mark and unique individual identification and movements from the company databases into the official government system.

Recommendation 12: It would be appropriate to have further discussions with the 3 major production companies (integrators) to assess whether they would prefer to develop their own systems or to have a uniform system across GB. A uniform and compatible system would be the most appropriate. Also, to ensure they are involved in any developments of the official livestock movements systems.

Recommendation 13: There must either be a voluntary arrangement or a compulsory requirement that where electronic tags are used and if the information is stored on private databases that these are compatible with the statutory transfer of the information to the official government livestock movement databases.

Recommendation 14: There should be a phased approach to any changes to identification in order to allow for technology to be fine-tuned and encourage industry engagement to maximise the use of the data.

Recommendation 15: In the short term as the pig industry already uses tags in their breeding stock a first step could be to make the electronic tagging of gilts, sows and boars compulsory by introducing legislation to that effect. A full economic assessment would be needed as there could be significant cost involved with a compulsory requirement.

Recommendation 16: Agreement is needed on the use of UHF or LF tags so that the corresponding readers on lorries and in abattoirs are capable of reading the tags. Discussions should be held with the pig industry and the tag manufacturers to decide which RFID system should be used. Once this is decided the frequency could be included in the legislation requiring the use of electronic tags. Note in the sheep industry legislation requires the use LF tags. An economic assessment of each system should be carried out.

Recommendation 17: In the longer term if the pig industry increasingly begins to use electronic tags a decision may be needed to introduce legislation that all pigs leaving the farm of birth must have electronic tags but unless there is agreement on the frequency to be use this could difficult

59. Concern has been expressed about the number of pet pig owners and the potential for disease spread. One suggestion has been that pet pigs should be treated as companion animals and micro-chipped. This would improve traceability in the event of a disease outbreak but would mean that pigs with microchips could not be slaughtered for human consumption. This is similar to the situation when equines are microchipped although a major disadvantage is that in the case of equines all horses have to be scanned to ensure no microchipped horses enter the abattoir. Microchipping of pet pigs is essential provided there is a clear definition of pet pig and a mechanism in place to ensure no microchipped pig enters an abattoir. Smallholder pigs that go to an abattoir would need to be tagged or slap marked

Recommendation 18 All pet pigs should be microchipped along the same lines as microchipping for cats and dog and a single central register should be developed and used to ensure no microchipped pig enters an abattoir.

60. The import and export rules for trade from EU member states have changed from 31 December 2020. The additional requirements for the identification for pigs currently in the legislation need to be updated to reflect these changes.

Recommendation 19: The identification requirements for pigs being imported from or exported to EU Member States need to be updated in the legislation. Clarification is required on whether EID tags would be acceptable for export and if so which system LF or UHF is to be used.

Chapter 7: Movements

Key Findings

1. There are no other comprehensive data sources on movements within the pig sector apart from eAML2 and ScotEID.

2. The majority of pigs will move from farm to farm whilst other movements will go directly from the finishing farm to slaughter.

3. The breeding and production sectors follow the same pattern of movements with the main difference being the total number of pigs being moved.

4. There are a mixture of small holdings and hobby farmers who will purchase weaners for fattening, sows for breeding and various other combinations.

5. Pigs originating from medium to small size commercial producers, non-commercial holdings along with hobby farmers will tend to go markets or movement locally.

6. For the small to medium sized commercial production pigs may only go from the holding of birth to slaughter. (Farrow-to-finish).

7. In the case of larger sized commercial production or the integrated companies' pigs may move once or twice from their holding of birth before slaughter but this will be recorded as batches

8. Over the past years there has been an increase in cross border movement of rearing pigs from Scotland down into England for finishing but only a limited movement of gilts into Scotland.

9. A smaller number of pigs are moved from the market to the farm where the 20-day standstill or isolation would apply. The potential risk of disease spread can be higher due to the mixing of pigs in the market although providing there is compliance with the 20-day standstill this would be considerably reduced.

10. There is concern from EPIC studies that compliance with the full 20-day standstill is not always being met but that further investigation is needed to evaluate this.

11. Enforcement of the 20-day standstill lies mainly with the Local Authorities. But it is difficult to monitor and identify specific contraventions

1 Introduction

12. The purpose of this chapter is to summarise the type and extent of the commercial and non-commercial pig movements within England and as far as possible to include movements into and out of Scotland and Wales. This is in the context of understanding movement practices and the role they may play in the spread of diseases along with the preventative measures which could be taken.

2 Methodology

13. Information on different movements was extracted from the eAML2 database in February 2021 for the periods 2017 to 2020. The data was cleaned as far as possible with the removal of

duplicate entries, checks on the CPH number and Post codes as well as reviewing the pending moves. There are limitations to using eAML2 in that not all movements will be recorded and for some the wrong information may have been included. There are also a number of pending moves where the pig leaving a holding are recorded but the recipient holding has not entered receipt.

14. There are no other comprehensive data sources on movements within the pig sector. Whilst there may be errors in the data it does provide a useful overview of the type and number of pig movements which are occurring. The movements are subdivided into a number of categories and for each of these there is a commentary on the extent, significance and potential disease risk which they pose.

3 Movements of pigs

3.1 Overview

15. As can be seen from the table below the majority of pigs will move from farm to farm whilst other movements will go or directly from the finishing farm to slaughter Table 1 summarises the number of pig movements by number and type extracted from the eAML2 database.

Table 11: Movement of pigs 2017 to 2020 as shown in eAML2

Type of movement	2017	2018	2019	2020
Farm to farm	8,846,887	9,409,212	9,877,475	10,656,411
Farm to slaughter	8,392,811	8,495,030	8,611,036	8,891,947
Farm to market	290,045	264,837	200,075	235,283
Market to slaughter	200,786	203,489	142,904	185,466
Market to farm	42,498	42,158	40,132	29,453
Export	3,229	2,070	43,692	31,901
To/from Shows	10,766	9,885	7,984	79
Import	5,491	2,225	7,488	3,639
Special Licence	3,543	3,230	3,255	1,537
Show sale	162	133	171	4
Vet practice	110	88	41	18
Import for Slaughter	2	94	0	0
Totals	**17,796,330**	**18,432,451**	**18,934,253**	**20,035,738**

Source eAML2

3.2 Farm to farm movements

16. Further information on the current movement practices in the commercial pig sector is described in more detail in Chapter 8 on Pyramids. The 20-day standstill applies to all pig movements apart from those within a PRIMO approved pyramid or for animals going for slaughter either direct, through a slaughter market or collection centres for slaughter. A number of other derogations are available under the Disease Control Orders.

17. The breeding and production sectors follow the same pattern of movements with the main difference being the total number of pigs being moved. Many of the farm-to-farm movements involve pigs moving down the vertically integrated production chain from the holding of birth to rearing units, then to finishing units and finally to the abattoir in the case of production. In the case of the breeding sector pigs will move down a similar chain with the final product being the breeding sow for the production holdings.

18. There are a mixture of small holdings and hobby farmers who will purchase weaners for fattening, sows for breeding and various other combinations. The size of the holdings can be determined by the number of movements as shown in Chapter 3. In the case of rare breeds, the replacements are sourced from Breed Clubs, BPA website or the producer will source from wherever they can. They will be recorded as movements on to their own holding. Pet pigs will be obtained from a variety of sources including small holders, rare breed holdings, rescue centres and from internet adverts.

19. There has been a major increase in cross border movement of rearing and finished pigs from Scotland down into England but only a limited movement of gilts only into Scotland. The details in table 21 are extracted from eAML2 to give an idea of the movements from Scotland and Wales into England. The accuracy of these figures cannot be verified but they do provide an indication of the overall extent of the movements.

Table 12: Pig movements within and into England from Scotland and Wales in 2019

Pig movements in 2019	England to England	Scotland to England	Wales to England
Farm to farm	9,152,919	605,802	3,234
Farm to slaughter	8,323,210	166,662	91,106
Farm to Market	177,101	6,422	4,480
Market to slaughter	141,035	1,729	46
Market to farm	34,190	38	505
Special licence	2,836	2	0
Show	1,194	0	77
Show sale	38	0	0
Vet Practice	24	0	0
Grand Total	**17,832,547**	**780,655**	**99,448**

SourceeAML2

3.3 Farm to slaughter

20. These movements comprise pigs from finishing units, rejects from the breeding sector and cull sow/boars from the breeding herds. Defra slaughter statistics for 2020 indicate that 8,686,000 clean pigs and 226,000 cull sows and boars were slaughtered in England and Wales making a total of 8,912,000 which corresponds to within 20,000 to the eAML2 figures of pigs moved to slaughter as shown in Table 11.

Source Defra: https://www.gov.uk/government/statistics/cattle-sheep-and-pig-slaughter accessed 17 February 2021

21. For small to medium sized commercial production pigs may move from the holding of birth to slaughter. (Farrow-to-finish). In the case of larger sized commercial production or the integrated companies' pigs may move once or twice from their holding of birth in well-defined batches before being sent for slaughter. This might be the most common situation but is not always the case as any holding despite its size can either farrow-to-finish or have multisite production.

22. In the commercial sector sows will be culled after 4-6 pregnancies or if they fail to become pregnant. There are limited number of specialist abattoirs with one in Essex and one in Scotland. Smaller numbers of sows will go to around 2 or 3 other abattoirs able to accept them. Additionally cull sows from Northern Ireland will be transported from Cairnryan in Scotland to Essex.

3.4 Farm to Market

23. Pigs originating from medium to small size commercial producers, non-commercial holdings along with hobby farmers are generally non-RT assured. Finished pigs are regularly sold at markets and will often go to a non-assured abattoir. The local butchers supplied by the abattoir are not interested in RT only local provenance and as a result the butchers want to buy from smaller independent producers. There are two systems currently co-existing with the RT assured and non-assured. It is often difficult for local butchers to procure assured meat because most the available assured pigs enter the main system.

24. Markets provide an alternative option for any producers who are not part of an integrated supply chain. A few sows and boars are sold through the Yorkshire markets at York and Selby. Small hobby farmers do not tend to use the markets to sell their pigs as they mainly use rare breeds' sales. A total of 37 Markets are recorded on eAML2. The movement of pigs to market poses a potential risk as they may have contact with pigs with different disease status arriving from number of premises.

3.5 Market to slaughter

25. When a batch of pigs arrives at the market they are placed in their own pen until sold. After the sale multiple lots will be batched up when loaded and not before. Slaughter may take place in larger abattoirs but often in the small abattoirs in order to supply local butchers. The disease risk is low as the animals will go direct for slaughter.

3.6 Market to Farms

26. A smaller number are moved from the market to the farm where the 20-day standstill or approved isolation would apply. The potential risk of disease spread can be much higher due to the mixing of pigs in the market although providing there is compliance with the 20-day standstill this would be considerably reduced.

27. It is interesting to note that the number of pigs entering the market (235,283) does not correspond with the numbers leaving the market either for slaughter (185,466) or to a farm (29,453) which shows that 20,364 pigs appear to be unaccounted for. The largest single factor causing this discrepancy may be due movements into markets being set up by at least two parties usually Producer and Market authorities which can create duplicate entries. There are some smaller discrepancies the other way around where more pigs leave a market than go in. In Scotland a few pigs are sold through markets mainly at rare breed sales, but not generally. Markets are used as collection centres for cull sows with pigs leaving for transit to the abattoir in Essex or to Brechin in Scotland.

3.7 Imports

28. Full details re imports are in chapter 9. The import data from eAML2 indicated that 3,369 pigs were imported in 2020. There was a difference by comparison with the TRACES import information where a total of 5,988 pigs were recorded as being imported into England. Of these 4,723 were breeding stock, 586 for further production, 2 for other purpose and 677 for slaughter. The TRACES database records consignments but there is no guarantee that the consignments actually travel. The disease risk is low although there would be concern if individual farmers decide to import breeding stock for use on their own farm. There are 3 categories of imports

i) The majority of imports comprise high value quality genetic breeding stock which will go direct into isolation before entry into the main breeding herds or into an AI centre.
ii) The second category of imports are cull sows/boars from Northern Ireland.
iii) The third category would be some rare breeds e.g., Mangalitsa and Landrace. This is expensive and imported pigs tend to be brought by genuine breeders with regard for herd health/isolation.

3.8 Exports

29. Details from eAML2 on export movements indicate that 30,836 pigs were exported from England in 2020. The bulk of these were finished pigs (25,558) exported for slaughter in Northern Ireland. Exports of breeding stock to the EU recorded by TRACES indicated 12,919 pigs to 15 countries whilst eAML2 indicated a total of 7278 pigs exported to 20 countries in 2020. NPA have an agreement with one of the carriers, P&O, to approve and book exports of breeding animals which exit through Dover. There were 13,758 pigs in 85 loads being exported using this carrier in 2020. These discrepancies demonstrate the difficulties in obtaining concise and accurate figures. Exports of rare breeds are currently on hold but in previous years there were exports of pedigree pigs to Europe e.g., Tamworth pigs to the Netherlands. Exports pose minimal disease risk as they are subject to veterinary certification. Further details in Chapter 9.

3.9 Shows

30. Animals may move off their premises of residence to a show irrespective of whether livestock have moved onto those premises in the previous 20 days, provided they have been kept in approved isolation facilities during that period and are individually identified. Animals may move from show to show or may return to their usual premises of residence without triggering a 20-day

standstill provided they remain in approved isolation facilities for 20 days and are individually identified.

31. The number of movements to shows was reduced in GB during 2020 because of the COVID pandemic. Based on the 2019 figures there were 4,177 pigs recorded as moving to shows with 3866 pigs moving from shows. Further investigation would be needed to identify why there was a discrepancy. Most of these pigs would return home either into isolation or with compliance with the 20-day standstill. Many of those attending show would be with rare breeds where there are strict controls at the show. The disease risk would be low provided the show rules and the 20-day standstill were correctly enforced.

32. Some rare breed holdings have isolation facilities especially those that show pigs extensively. The quality of the isolation facility is important for those going from show to show. Isolation units are inspected when the unit is set up by either the producers own vet or APHA. In Scotland showing pigs at the Highland shows was stopped but appears to be creeping back in although it is actively discouraged.

3.10 Other movements

33. The data available from eAML2 show a number of other movements which suggest the visits to the vet practices are quite restricted probably by small holders, hobby farms and pet owners. Other movements would cover breeding movements again by hobby farmers and small holders either taking the sow to a boar or hiring a boar onto the farm for a number of weeks. Movements to laboratories and to AI centres will be included.

4 Compliance with Standstill Requirements

34. There is concern that not all eligible movements trigger the full 20-day standstill. The EPIC report (EPIC 2016) identified potential breaches of the standstill requirements which were detected between producers who did not belong to any pyramids. In that study period 1979 movements involving 238 producers of which 20% were small producers indicated at least one movement within the standstill period. It was not clear from the study whether these were genuine breaches or whether one of the derogations other than PRIMO pyramids was involved.

35. A later EPIC study entitled “Descriptive Analysis of Pig Production Pyramids in GB” as yet unpublished indicates that 1246 non-PRIMO approved holdings appeared to send off pigs less than 20 days after arrival of pigs onto the premises. Of the 1246 holding 32.9% were characterised as small holders from their movement records. It is feasible that some of these movements were covered by the derogations in the Disease Control Orders or that the smallholders were unaware of the legislation.

36. APHA also recorded that some apparent non-compliances have been identified with up to 100 farms estimated not to be small holdings which were moving animals onto farm but with no record of movements off in the two-year period. Some of those identified are likely to be AI centres doing their own culling or small slaughter centres that had not been correctly identified, leaving about 50 farms not appearing to comply with movement regulations.

37. Confusion over the status of the pigs and whether they were or were not in a pyramid might be the cause of some of the breeches. On eAML2 the application for a movement requires the owner to tick a box indicating whether the movement is linked to a pyramid. This can be variable for the same holding on one occasion ticking the box and on the other leaving the box empty.

There may also be confusion on the part of the recipient of the pigs. Movement of pigs from a PRIMO approved farm to a non-approved holding would trigger the standstill but the owner of the receiving holding might assume that because the pyramid box is ticked there is no requirement for the standstill. In Scotland there is no box to tick in ScotEID to indicate pyramid membership thereby avoiding such confusion.

5 Conclusions and recommendations

38. There is a potential disease risk posed by each category of movement although this can vary considerably depending on the type of move. Risk is minimised by good biosecurity, the imposition of the 20-day standstill and the use of APHA approved isolation, all of which aim to prevent diseases spreading rapidly and widely. The 20-day standstill would help reduce the risk of extensive outbreaks of disease by slowing the geographical spread, reducing the build-up of infection, enabling detection of any disease in the 20-day period and resulting in faster and easier tracing of the infection.

39. From a purely veterinary perspective the optimum disease control measure is to enforce a 20-day standstill without allowing any exemptions. However, the strict implementation of the 20-day standstill could be counterproductive as it is essential to ensure a balance between disease prevention and the practicality of the industry's operations. The option of keeping the 20-day standstill as a basic rule but allowing farms to be exempted for a number of reasons was permitted based on risk assessments.

40. Enforcement of the 20-day standstill lies with the Local Authorities in England/Wales/Scotland, APHA and RFID/RPA but it is difficult to monitor and identify specific contraventions. It would advantageous if eAML2 or its successor could automatically identify holdings which breached the 20-day standstill so that the authorities could be notified for investigation and enforcement to take place.

Recommendation 20: The livestock movement databases need to automatically identify non-compliance with the 20-day standstill. The information should then be provided in to either APHA or the Local Authorities in a format which is simple and easy to follow.

Recommendation 21: In order to carry out their enforcement function Local Authorities in England require an updated framework agreement and funding to provide specific services in relation to PRIMO. There would be separate requirements in Scotland and Wales

Chapter 8: Pyramids

Key Findings

The analysis of the GB pig industry structure provides an overview in relation to the derogations from the 20-day standstill industry and indicates that:

1. At present much of the GB pig industry relies on unrestricted movements of pigs down the vertically integrated chain to operate successfully.

2. With a continuous flow of pigs into the units there is a need for a derogation to allow movements off in less than 20 days. This requirement exists for the Grow Out and Gilt Mating units in the upper tiers and for weaner-breeder and rearers in the lower tiers.

3. It is difficult to picture the full structure and interconnections of the pyramids or the linkages with the approved holdings further down the pyramid. This wider 'pyramid' is less tangible and harder to visualise and there is some cross-over of supply.

4. APHA seeks information annually from each company, but it is quite clear from this and the interviews that there is often no single company responsible for the whole, wider, membership of each pyramid.

5. APHA have lists of all the PRIMO approved holdings, but many have changed ownership and pyramid over the years and continue to do so. It is a challenge to maintain up to date information on the linkages between all the holdings.

6. Under PRIMO legislation derogations can be given for breeding and growing pigs. This allows the concept of the non-registered pyramid which only includes weaner-breeder and weaner rearers which do not appear to be clearly associated with a registered breeding pyramid.

7. The work by EPIC suggests that some sites are registered in multiple pyramids and that there is movement up, across and between pyramids based on an analysis of movement data. Each of these movements could pose a potential risk of disease spread more widely than in a single pyramid alone.

8. Pyramids are often located geographically throughout GB and represent a potential risk of disease spread into wider geographical areas, demonstrating the need for strict controls.

9. Movements from non-approved premises onto PRIMO approved premises are permitted providing the pigs go into 20-day isolation on their holding of origin but it was not clear that on-farm isolation units at all levels were approved by APHA.

10. A major challenge for disease control is the biosecurity risks associated with the increasing number of outdoor herds at all levels apart from the nucleus herds which must be indoors. The CSF outbreak of 2000 began in an outdoor unit

11. The outdoor herds move round paddocks regularly and moving site every 2-3 years. There may be more than one premises, and/or outdoor paddocks especially with the 10-mile rule. This brings further risks to the overall pyramid, but which may be mitigated by conditions relating to the internal transfers among those buildings/paddocks.

12. Some of the PRIMO requirements were considered to be vague and open to interpretation, which means it was not always clear to the producer on how to meet the requirements for approval

13. There is no evidence of deliberate non-compliance with the rules of the pyramids and PRIMO approved premises.

1. Introduction

1.1 Background

14. The 20-day standstill requirement aims to reduce the risk of disease spread, as the 20 days allows time for disease to become apparent before the next movement of pigs off the premises of destination. The Secretary of State can approve holdings as exempt from the 20-day standstill under Article 21 of PRIMO and equivalent Scottish and Welsh orders for the purpose of movements of pigs for breeding and growing.

15. The detailed conditions for approval are not defined in legislation. The approval procedures have been developed by APHA over many years with policy guidance and following precedents since a 21-day standstill was first introduced by the Movement and Sale of Pigs Order (1975). This resulted in the concept of a 'pyramid' which was developed as part of a vertically integrated pig industry to allow large volumes pigs to flow seamlessly down the pyramid. The derogation in place for pyramids allows movements of pigs within a pyramid which do not trigger the 20-day standstill period whilst minimising the potential for disease spread. All movements under this derogation must still be reported to eAML2 or ScotEID.

16. In the absence of a 20-day standstill it is essential to prevent diseases being introduced at the top of the pyramid and being spread to holdings lower down the pyramid. The highest-level biosecurity is needed at the apex of the pyramid. If infection did enter it is important to ensure that it could not move up to holdings at a higher level. It is equally important to reduce the potential for disease transfer between pyramids. For this reason, there are strict rules about identifying the source and destination of pigs moving onto and off PRIMO approved holdings. Figure 5 shows the structure of the classic pyramid.

Figure 5: Classic pyramid structures

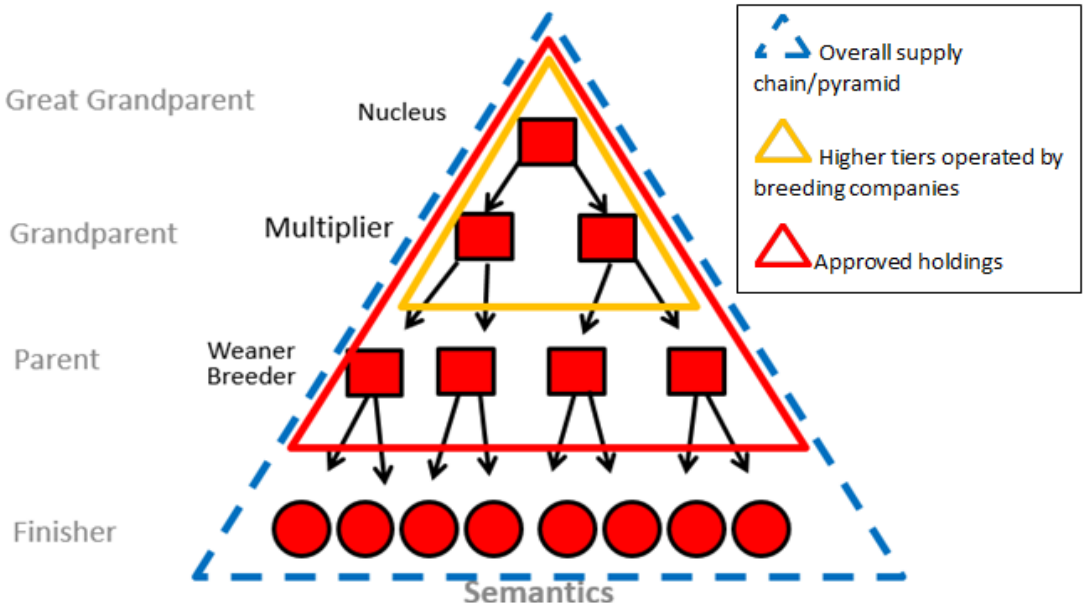


Diagram provided by APHA

1.2 Classification of herds

17. When originally introduced the classic pyramid had a relatively simple structure with Nucleus and Multiplier breeding herds providing breeding stock to the weaner-breeder herds. Since then the industry has become more integrated and intensified. As a result, there are now more categories of herds in the pyramid especially at the higher levels.

18. Full definitions for each category of herd in a pyramid are at Appendix 4. Higher-risk holdings form the ‘apex’ of the pyramid. These are typically controlled by a breeding company and form a set referred to as that company’s Nucleus/Multiplier list, or ‘NM Sheet’ which is held by APHA. In the early days pyramids consisted only of the Nucleus and Multiplier herds but with the increased development of the industry they now consist of Nucleus, Nucleus-Multiplier, Multiplier and associated Grow Out Units and Gilt Mating Units. The role of these holdings is to provide replacement breeding stock to the commercial production units lower down the pyramid. Pigs not selected for breeding are sent for finishing and slaughter.

19. Lower-risk holdings consist of weaner-breeder and weaner-rearer which are the main drivers of the flow of pigs within the GB pig industry. Weaner-breeder herds make up the largest number of herds requiring the PRIMO exemption from the 20-day standstill. They may be controlled by a breeding company, a separate production company, independent companies or family farms.

1.3 Requirement for the derogations

20. Breeding companies produce Great Grandparent (GGP) and Grandparent (GP) gilts and boars for the commercial sector. The GGP and GP breeding herd produce weaners which may be moved to Grow Out units for rearing and selection before onward movement down the pyramid for breeding. They have a separate registration (CPH, location, herd, facility) as well as a separate approval and are considered a separate entity for movement reporting purposes, with a separate herd mark. With a continuous flow of pigs into the units there is a need for a derogation to allow movements off in less than 20 days. A similar requirement exists for the Gilt Mating units.

21. Weaner-breeders produce weaned piglets for sale or movement to rearing and/or finishing herds. They need to bring on replacement breeding gilts as parent stock from the Multipliers over the course of a year. The PRIMO approval allows them to bring on their replacement breeding stock without losing the opportunity to move piglets each week to rearing/finishing herds. As they often need to sell or move pigs off on a weekly basis these herds make up the largest number of herds requiring the PRIMO exemption from the 20-day standstill.

22. Rearing herds can be run on a continuous, or all in/all out batch system. Continuous systems receive small 7kg piglets each week and move larger pigs 35 Kg off each week. They need to be approved under PRIMO to avoid standstill and must source weaners from holdings which are themselves approved (weaner-breeders).

23. Finishing holdings do not need any approval as they do not need to comply with 20-day standstill as it is assumed that all moves off are for slaughter. If for any reason a holding decided to sell or move pigs elsewhere than for slaughter a 20-day standstill would be required on the recipient holding.

1.4 Current numbers of approved PRIMO holdings

24. APHA maintain a list of approved holdings in the breeding sector. The list for each company is its 'NM' sheet (nucleus and multiplier) – but will also include associated grow-out and gilt-mating units. NM sheets are designed to incrementally update information regarding breeding pyramids. However, the NM sheets do not appear to be linked to the other PRIMO holdings further down the chain. Neither do the NM sheets cover the new situation where a breeding company may have 2 or 3 separate informal pyramids in operation.

25. In 2017 there were 19 registered pyramids involving 104 holdings registered on the NM sheet within addition 236 registered as weaner-breeders, 25 as weaner rearers and 14 registered as both weaner-breeder and rearer holdings. These holdings represented 1.27% of holdings recorded as moving pigs during a study period from 1 January 2016 to 31 December 2018 (personal communication).

26. Based on the 2020 NM sheet provided by APHA there are currently 17 registered pyramids involving a total of 92 separate premises in England, Scotland and Wales. Details of the numbers of weaner-breeder and rearer approved premises were not available at the time of this report. A limited analysis of the current NM sheet and following the interviews with the industry it is difficult to picture the full structure and interconnections of the pyramids or the linkages with the approved holdings further down the pyramid.

1.5 Approval of PRIMO holdings

27. APHA are responsible for approving holdings to be exempt from the 20-day standstill. APHA conduct approximately 500+ annual visits by an APHA officer to audit all approved pyramid sites. The Nucleus and Multiplier sites have an open-ended approval but still have an audit inspection whilst the weaner-breeder/rearer approved sites are re-approved annually. Visits are coordinated nationally but carried out by local veterinary assessors to ensure the standardisation of the visits and approval of pyramids APHA developed instructions, coordinated training and provided detailed interpretation of the rules.

28. The approval documents for Nucleus and Multiplier herds as approved sources issued under the Pigs (Registration, Identification and Movement) Order 2011 as amended specifies that "the disease control standards and the disease precautions must be under the direct supervision of a veterinary surgeon who must visit the herd at least once every three months" It is not clear what records are kept of these visits and by who. As most of the sites will be members of the Red Tractor Assurance scheme it is likely that quarterly visits for Red Tractor are at the same time as those for the approved Pyramid holdings to avoid duplication of visits. The private veterinary surgeon visiting the site to advise on health and welfare will fill in the RT paperwork in tandem with the supervisory work for the approved herd as there is considerable overlap between the two.

1.6 Non pyramid approved holdings

29. Art 21 of PRIMO (Art 15 in Scotland) does not mention 'pyramids and therefore approvals need not be limited to pyramids. Consequently, a pair of holdings, independent of a pyramid, can in principle be approved. A weaner rearer can operate independently of a wider pyramid, but nonetheless requires its source of pigs to be approved, to weaner-breeder standards. In turn, these sources are closed herds rather than themselves receiving pigs from further approved sources (multipliers)". This indicates that a separate category of weaner-breeder not linked to a pyramid may exist.

30. The APHA conditions of approval, their interpretation and guidance for inspections indicates under sources of pigs that “This should be agreed at initial approval, and re-confirmed, and audited, annually, from movement records and by reference to the lists of approved holdings for each company maintained centrally by APHA”. This does not appear to be the case with the weaner-breeder and weaner-rearer holdings not linked to a registered breeding pyramid. This creates the concept of the non-registered approved pyramid which only includes weaner-breeder and weaner-rearer holdings not associated with a registered breeding pyramid.

2 Industry views and comments

2.1 General comments

31. There is nervousness around potential changes to the movement system as from an industry perspective the current system works well so whilst an update would be acceptable a major change would cause considerable disruption. The NPA view is that the 20-day standstill should remain provided exemptions do not lead to risky moves. It was recognised that moving animals to a farm in a different area is the biggest risk. Alternatively medium sized farms have very restricted supply chains dealing with the same farms all the time and represent the lowest disease risk.

32. There was concern from APHA that the current system was no longer completely secure in relation to disease prevention and control due to the risk factors of geography, outdoor/indoor and unacceptable movements.

2.2 Approval of pyramids

33. A number of the interviewees commented that greater clarity on unit and definition type in the pyramid arrangement would be helpful. Some of the PRIMO requirements were vague and open to interpretation, which means it was not always clear to the producer on how to meet the requirements for approval. Additionally, a minority reported that there had been problems with APHA inspections for PRIMO going above and beyond the requirements. Better guidance and clearer rules are required.

34. In some instances, there have been delays with APHA issuing PRIMO approvals to weaner-breeders due to under resourcing at APHA. The system was previously handled by regional teams this has been centralised. Delays cause issues with renewing licences and to delays to farm assurance status of the holding.

2.3 Membership of pyramids

35. Interviews with the breeding companies and commercial production companies indicated they were content with the current arrangements. From the breeding company perspective some of their larger customers run closed herds only taking in semen. Of those that take in animals, some operate a three weekly batch system, which means they do not need the 20-day exemption. Others obtaining pigs more frequently apply for exemptions as part of a pyramid.

36. There was some variation in the way companies considered the need for PRIMO approval for their sites. Some had approved sites although they were not necessary as they moved batches of pigs at 3 weeks but considered it important to be part of a pyramid. Others had approved sites just in case of an event where they had to move breeding stock unexpectedly onto their premises. Those companies with a continuous productions system needed the derogation to enable them to

function. All agreed that where there is a weekly continuous flow system in place whether this involves the movement of GGP or GP to gilt grow out or gilt mating sites or wearers to rearing sites the 20-day derogation is essential.

2.4 Informal pyramids

37. In reality for many of the breeding and commercial companies, two types of pyramids exist within the umbrella of a single formally registered PRIMO pyramid approved by APHA. In some cases, the registered PRIMO pyramid consisted of many holdings at all levels. As a result, the companies operate an internal system for disease prevention and control purposes. Many of the breeding and integrated companies had 3 or 4 informal pyramids based on nucleus and/or multiplication units within their organisation. Each of the informal pyramids was separate from each other from the top level to the bottom with the only points of contact being the veterinary services, the management team and feed mills.

3. Movements

3.1 EPIC analyses in 2016

38. A number of studies have been carried out using data from the eAML2 and ScotEID movement databases in order to provide a descriptive analysis of pyramids in GB. A study reported in 2016 had as two of its objectives i) to describe and evaluate the geographical extent of all registered pyramids in GB and ii) to identify trading behaviours that may increase the likelihood of substantial spread of disease. (EPIC 2016)

39. The results from an analysis of actual movement patterns showed that upward movements were identified which was considered unexpected in an intensive pig industry based on a pyramid structure. A number of farms in GB moved pigs to PRIMO approved premises that were not part of a pyramid although this was later thought to be due to imported animals which had gone into isolation.

40. The conclusions from the report indicated that pyramids were not isolated from each other nor from the rest of the pig farms in GB. It was suggested that the assumed vertically integrated structure from top to bottom may not always true and that the movements in the GB pig industry were much more complex. There were also concerns regarding movements between pyramids highlighted in the EPIC reports.

3.2 Current work by EPIC

41. EPIC is currently finalising a research project where the eAML2/ScotEID data used in the latest project appears to confirm some the findings from 2016 paper that: -

(a) Some sites are registered in multiple pyramids
(b) There is movement up, across and between pyramids
(c) Previously flagged movements from non-PRIMO sites to PRIMO sites are not a concern as they appear to be imports of breeding animals to isolation facilities, but these are difficult to identify from movements alone and need clearer labelling on eAML2
(d) Movements out of the pyramid are to finishing units which do not have to be approved as the 20-day standstill does not apply to pigs going for slaughter. This should be of less of a disease concern as pigs should only be moving to slaughter where there is surveillance at

the abattoir. If moving elsewhere from the weaner-breeders/rearers the standstill would apply.

(e) There are examples of random movement patterns and high numbers of suppliers (the requirement is for one source) which represent a disease risk.

3.3. Category of Movements

42. Internal crossover within a specific pyramid is currently allowed by the approval conditions for individual holdings provided the pigs move down the pyramid. The approval for the weaner-breeder specifies that there should be one source of breeding stock but that a second source can be nominated. This has the potential to increases the risk of increasing the number of holdings affected with a disease if anyone was to become infected although it should be limited to the specific pyramid. Approval is required for an approved holding to change its source of pigs.

43. Occasional external crossover from a nominated approved source outside the pyramid is also allowed within individual holdings approvals. This can occur with the changes of ownership and allegiance in these supply arrangements. Any other moves into the pyramid must be via isolation. In the longer term, a more substantial change to arrangements might be requested with the weaner-breeder henceforth being aligned to a different breeding company and pyramid, in which case the approval changes.

44. Movement of pigs between PRIMO-approved and non-approved farms especially all movements departing from a non-approved farm to a PRIMO-approved farm may appear to increase the risk of disease in a pyramid. However, the movement is currently permitted from non-approved sources provided the pigs are placed into 20 days isolation which is not necessarily recorded in the movement databases.

45. The conclusions from the EPIC studies were based on an analysis of data from a number of databases mainly eAML2 and APHS over a period of two years. They did not investigate the findings on farm to assess why the contraventions were occurring and whether there was a practical and valid reason why the supposed contraventions appear to have occurred. Each of the potential issues identified by EPIC needs to be fully investigated. Initial investigations suggest this is not unexpected for movements between pyramids to occur as some of the breeding companies in the NM list are interconnected. For example, one breeding company listed as one pyramid receives gilts from another pyramid's parent stock into their gilt mating unit. Based on the likely findings from the as yet unpublished review by EPIC more detailed investigations will be needed.

3.4 Isolation facilities for PRIMO approved premises

46. There is a facility that pigs could be moved onto any PRIMO approved holding from a non-approved holding provided they are placed into an APHA approved isolation unit for 20 days before joining the approved holding. Currently there are 4 approved isolation units listed on the NM list but there may to be more isolation units for the weaner-breeder /rearer sites. The use of isolation units is an effective way of reducing the entry of any diseases into a pig herd provided they reach high standards. APHA approve an isolation unit to the same standard as for pyramid holdings themselves. The inbound animals should be isolated for 20 days to the same standards of separation from the outside world before joining the Pyramid. The alternative of a 20-day standstill after arrival is much weaker as it does not prevent disease arriving. The 'middle way', which is to allow an isolated 'part' on one the pyramid holdings, is too unwieldy and in practice APHA do not permit that in the case of pyramids.

3.5 Isolation facilities under the Disease Control Order

47. Under Schedule 1 of the DCO a number of different movements off premises are permitted during the 20-day standstill period provided the pigs have been isolated on the premises of origin in an isolation unit approved by a veterinary inspector for 20 days before the movement. Under Schedule 2 of the DCO a number of different movements onto premises will not trigger the 20-day standstill restriction. For example, the movement of breeding pigs which have spent 20 days in approved isolation on their premises of origin will not trigger the standstill at their destination. Pigs moving from a show or exhibition back onto their premises of origin will not trigger the 20-days standstill provided they move into approved isolation for 20 days.

48. It is not possible to identify an isolation unit from movement data alone unless the company has voluntarily labelled it this way when registering the site nor was it clear that all the on-farm isolation units were approved and recorded by APHA. It would be helpful if APHA could share the guidelines for approval of isolation units under PRIMO and DCO widely with the industry.

4. Other risks

4.1 Geographical distribution

49. The Report by EPIC (2016) showed the spatial distribution of farms belonging to breeding pyramids and their contacts. This was based on the two-year period 2012/13. Many of the pyramids were relatively small and limited to small geographical areas. Only 2 spanned the whole of England and Scotland. The current work by EPIC when published will use the analysis of movement information to give an indication of current pyramid size and distribution.

50. Currently individual holdings are approved but there is no control over the size or geographical extent of each pyramid. Since the time pyramids were introduced companies especially integrated companies have become larger and more complex. They can now extend from the north of Scotland along the East coast of England. The risk is that if disease enters a pyramid the infection could be very rapidly transmitted further down the pyramid and all over GB in the worst-case scenario.

4.2. Outdoor units

51. There is increasing pressure on the industry from retailers and consumers to move to outdoor breeding and finishing. Outdoor holdings are more complex involving more than one premise and various outdoor paddocks which change from time to time usually at 2–3-year intervals. A further complication can be the 10-mile rule which brings further potential risk to the pyramid although outdoor units are not allowed at the Nucleus level. (Details of risk assessment at Chapter 5 Paragraphs 16 and 33)

52. Biosecurity is much harder to achieve with potential spread of disease from infected material discarded into the unit over a hedge or boundary or the presence of infected wildlife. An added complication can result from the presence of other smaller pig units in close proximity to the outdoor unit.

4.3 Other species

53. Mixed species. The original approval regime predated the 2001 FMD epidemic after which the concept of standstill and other general controls was extended to other species. Historically, the

presence of other species did not affect approvals under ‘PRIMO’. Many approved holdings, particularly at the weaner-breeder level, involve pigs being kept under contract to the wider company by ‘farmers’ who may also keep other species. Approval conditions govern this to a limited extent.

5 Conclusions and recommendations

5.1 Conclusion

54. Based on the above findings there are a number of problems associated with the current arrangements. There is the potential for widespread dissemination of disease such as FMD or ASF if they entered the pyramid system. The implication from the analysis above suggests that partly due to the changes in the industry and the piecemeal development of the pyramid system since it was first established that the current pyramid structure, approval, rules and controls could be improved. The reports by EPIC suggest there are potential breaches of the rules and potential for rapid spread of diseases such as ASF via movements if the virus enters a pyramid. As indicated above each of the potential issues identified in the EPIC reports need to be fully investigated to relate the modelling findings to the practical reality of the situation on farm.

5.2 Pyramids

55. It is hard to identify specific businesses from looking at the pyramid structure and this is a concern. APHA receive many PRIMO approval applications each year. This means the pyramid structure is constantly changing especially with outdoor pig units which may move to different paddocks or sites each year. The rationale of the pyramid arrangement is to allow the vertical movement of pigs without the need for the 20-day standstill, but the current level of integration and the size of the big companies make this more of a challenge.

56. In the short term a number of changes can be made to improve the situation. These should be aimed at providing more clarification on the structure of each pyramid, linking all the members of pyramids together from the top with the breeding companies to the bottom with the weaner-breeder/rearer. It is also clear that the breeding companies might have a list of their clients but their knowledge of the weaner-breeder/rearer relations to the pyramid were unclear.

Recommendation 22: Further work should be carried out to identify the detailed structure of each pyramid and the relationships at each level.

Recommendation 23: Detailed discussions should be held once a year by APHA at a GB level with the individual heads of the breeding companies and the integrators to review their derogations, approval and organisational structure.

57. A better look at the data held on each pyramid is needed and more data cleansing in line with the evolving situation. Producers may change their supply chain at any point. At present the information on pyramids and their activities is held in 5 datasets, eAML2, ScotEID, APHA i) breeding companies, ii) weaner-breeders and iii) weaner rearers. Only by bringing the data together into one system will it be possible properly manage the pyramids to ensure that the derogations do not compromise the disease status of GB and that compliance with the movement requirements are in place

Recommendation 24: Develop information systems which hold all the details of all pyramids and their members in one place along with the movement data which is easy to

update and interrogate. A system is needed that can be automatically updated when new information is available.

58. From an industry perspective the current system works well so whilst any updates would be acceptable any major change would cause considerable disruption to the supply chain from breeder at the top of the pyramid to the rearer at the bottom. Whilst some companies operated batch systems with movements every 21 days many currently require the derogation to operate effectively. Although removal of the derogation is the best option in terms of disease control the potential impact on the industry means that this option is not considered feasible at the present time. Further work is needed to assess and understand the impact of removing the derogation and /or regulating the likely new arrangements.

Recommendation 25: In the longer term there is need to consider the removal of the derogations although this would need discussion with industry to assess how this could be introduced over a long period of time with changes to industry practices

59. Some of the PRIMO requirements were considered to be vague and open to interpretation, which means it was not always clear to the producer on how to meet the requirements for approval. There appears to be some confusion over the classification of herd types with some of the requirements and rules for approval status being vague and confusing to some applicants. This has been partly resolved by the production of Appendix 4 by APHA. This can be resolved by improvements to the APHA instructions and communications to the pyramid members which is understood to be underway.

Recommendation 26: Discussions with the industry to clarify and agree the definitions of the different types of herd and movements which are and are not permitted

60. A random audit in 2019 into pyramid approvals recommended more training and a revamp of the instructions. This has been completed and the new instructions for guidance to APHA staff are to be issued in the near future.

Recommendation 27: Continued training and audit of APHA Veterinary inspectors to ensure there is uniform action across GB with regard to the approval and management of pyramids

5.3 Risks and risk mitigation

61. The gradual changes in pyramids over time and the way in which they operate has increased the potential for disease spread into and within them. An analysis of the risks identified in this chapter can clarify those areas where additional controls are needed. Each of the risks is listed below with recommendations for risk mitigation.

62. **Geographical risk:**

Risk: There is potential for widespread of disease in GB but the industry is structured in such a way that it is not possible to restrict the geographical movement of pigs without major disruption.

Recommendation 28: Ensure and maintain biosecurity requirements for all approved holdings and hauliers to prevent disease entering pyramid and being spread via hauliers.

63. **Outdoor units**:

Risk: The highest disease risk will be associated with the outdoor units which may continue to increase especially with the pressure on integrators from the retail sector. The risks are likely to be associated with the potential introduction of disease from non-approved neighbouring herds and wildlife. There are indications that some aspects of the biosecurity requirements for PRIMO approved premises are not fully enforced.

Recommendation 29: The biosecurity requirements for outdoor units should be reviewed and must be implemented rigidly for the nucleus/ multiplier and multiplier herds with no room for any concessions to be granted for example in respect of the double fencing of outdoor units by the Veterinary Inspector of the Department responsible for approval.

64. **Single premises:**

Risk: A temporary land association (TLA) associates a permanent CPH with land or a building that's within 10 miles of that CPH's main livestock handling area. There is no need to record or report livestock movements between that land and the rest of the main holding. This is a potential loophole to allow an increased possibility of disease spread both to the main herd but also from the herds if they become infected. This is especially important for outdoor herds in a pyramid and should be considered if Recommendation 7 in Chapter 5 is not implemented. This is discussed in more detail in Chapter 5 paragraphs 16 and 33.

Recommendation 30: Prohibit the TLA for outdoor herds or failing that reduce the distance from 10 miles to 3km to mirror the zone if notifiable disease were to occur.

65. **Internal cross over**:

Various internal movements are permitted within single pyramid. In order to have the 20-day standstill derogation only movements within a pyramid should be vertical. Multiplier and weaner-breeder herds are permitted to receive pigs from a primary and secondary source. These sources must be included in the approval documents issued by APHA. This is allowed but does increase the risk in terms of potential number of holdings affected if any single one was to become infected.

Recommendation 31: Within a single pyramid the source of pigs moved vertically onto approved holdings should continue to be limited to two with all sources being recorded on the APHA approval documents

66. **External crossovers:**

Risk: Occasionally pigs move from one pyramid to another pyramid which is permitted by the weaner-breeder authorisation. This can result in potential disease spreading between pyramids with the potential to infect a greater number of holdings. In these cases, either the 20-day standstill should be implemented or alternatively an APHA approved isolation unit should be used.

Recommendation 32: Require any movement into a pyramid from another pyramid or any other site to either trigger the 20-day standstill on the whole site or place the pigs into an APHA approved isolation unit before movement.

67. **Movements up the pyramid:**

Risk: This type of movement could spread disease to multiplier herd in the upper tiers with considerable potential for disease disseminations.

Recommendation 33: Enforce the ban on pigs moving back up a pyramid unless they go to a 20-dayisolation approved by APHA with no movement up to a nucleus herd permitted.

68. **Movements out of a pyramid**:

Risk: Under the legislation there is no reason to prohibit the movement of pigs from a herd in any of the pyramid tiers to external herds. Nucleus and multiplier herds may sell gilts or boars to external herds, whilst weaner-breeder may sell pigs to non pyramid holdings in which cases the 20-daystandstill or approved isolation would be required.

Recommendation 34: Publicity and education are needed to ensure that any movements out of a pyramid to non pyramid holdings would trigger the 20-day standstill unless the pigs were isolated for 20 days in approved isolation by APHA.

5.4 Redesign of the system in the long-term

69. There are a number of reasons why the system needs to be redesigned. The industry has undergone considerable consolidation over the past 20 years and this is likely to continue in the future with more worldwide partnerships for the breeding companies. For outdoor production herds it is expected that the industry will continue to consolidate with three fully integrated companies. The industry's future is linked to the large integrators and to the small producers supplying local and niche markets. The main impact will be on the middle group of producers who will find it increasingly difficult to obtain a reasonable price for their pigs. Producers with 500-750 sows will survive as either a contractor or an independent but it is likely that many independent farms will tie in with the big three integrators.

70. This work has identified 3 classes of pyramid which could be used as a basis to develop a new system in the longer term.

i) The registered approved pyramid which has most of the members.
ii) The unregistered approved pyramid which mainly comprises the weaner rearer linked to a weaner-breeder neither of which is linked to a registered approved pyramid.
iii) The informal pyramid established for disease control purposes by some breeding companies, integrators, and other commercial companies. A number of these can exist within one registered approved pyramid. The informal pyramid could become the basis of a new pyramid structure.

71. In all cases the breeding and integrated companies are members of a formal PRIMO approved pyramid. Many have already established internal pyramids for disease control purposes although these do not need to be formally PRIMO approved. A redesign of the system could take this into account and avoid confusion about which pyramid, approved or company is involved in movements.

72. Based on the comments during this review clarification is needed on whether PRIMO approval for the 20-day standstill derogation is needed for all those currently approved holdings. The derogation is only required in some circumstances and should be limited to essential activities of the industry where no alternative exists. It would be feasible to require as part of a re-approval of currently approved PRIMO holdings at all levels a justification why the derogation was needed. If small numbers of replacement gilts were moved on each year the producer would need to explain why isolation facilities could not be used instead of the derogation.

73. It could be the responsibility of the breeding companies and the major integrators to build on their current informal arrangements to set up their pyramids and ensure that the entire supply chain for that pyramid was well informed of the rules. The companies would have to take responsibility for their pyramid and present their proposals to APHA for agreement. The responsibility for ensuring the company pyramid complied with the rules would lie with the company but would be audited by APHA. Much of this information will already be held by the companies.

Recommendation 35: Discuss with the breeding companies and the integrators the redesign of the system to take into account the informal pyramids both to enable movements and as part of the overall contingency plans in the event of a notifiable disease outbreak.

Chapter 9: Import/Export

Key findings

1. Most of the imports into GB are for breeding stock mainly high quality boars for the breeding companies. Cull sows are imported from Northern Ireland for slaughter.

2. Exports are primarily breeding stock to various EU member states and other countries.

3. The scale of the imports and the exports in the different sectors can be obtained from a number of different databases, none of which provide complete and detailed figures of pigs involved.

4. For imports before 1 January 2021 the system for tracing imported pigs was unsatisfactory and relied solely on the producer at the destination of the imported animals entering the information into eAML2. This was also complicated by the country (England, Wales, and Scotland) of entry into GB

5. There were no links between TRACEs and eAML2 which meant that it was difficult to identify all imported pigs or their destinations without using two separate systems which meant traceability was compromised

6. In the case of pigs for slaughter there had been some confusion as APHA advice was taken to suggest that sending the health certificates to Carlisle would suffice.

7. Export Health Certificates are recorded by APHA but whilst the number of certificates issued is known there is no record of number of animals exported.

8. There is a lack of clarification in the previous and current recording arrangements for pigs being imported into GB from Northern Ireland especially when imported into Scotland and Wales for shipment to England.

9. There is inconsistency between the various databases which can reduce the confidence in the accuracy of the figures and the ability to trace animal effectively in the event of a problem.

10. Imports and exports are essential for the breeding companies. The current lack of Border Control Posts (BCP) on the continent and in GB will disrupt trade and have adverse effects on the breeding programmes and export markets.

1 Introduction

1.1 TRACES

11. Until 31 December 2020 the UK had access to the EU web-based service known as TRACES (Trade Control and Expert System). This records movements of live animals and their products into or through different territories of Member States. It is possible to obtain the numbers of pigs moved for slaughter, production, and breeding and for other purpose with details of the country of origin and destination. The EU published details of animals traded between Member States in 2018 using data from TRACES which can be used to obtain details of pigs imported to and exported from UK. More up to date figures have been obtained by APHA and are shown later in this report.

Source; TRACES data - Animals traded between Member States in 2018.xlsx - Page 8 to 14

https://ec.europa.eu/food/sites/food/files/animals/docs/ahsc_report_2018_en.pdf

12. TRACES was also used by the Northern Ireland authorities to notify the movement of pigs to the GB authorities. The process is similar to the process for producing an Intra Trade Animal Health Certificate for EU Trade but the end product in the case of GB exports is a “Notification” and not a “Certificate”. Any references to “Certificate” in the TRACES system when used for GB imports from Northern Ireland would be taken to mean “Notification

1.2 APHA databases

13. Details of pigs imported into the UK from third countries and pigs exported from Great Britain to either third countries or to Northern Ireland, Jersey/Guernsey and the Isle of Man have been provided by APHA from their internal databases.

1.3 Animal Livestock Movement Databases

14. The movement of imported pigs from the port or airport of arrival into GB is recorded using the eAML2 and ScotEID databases. The responsibility for recording the arrival of pigs lies with the producer at the destination of the pigs. It is possible to obtain information from the two databases to identify the numbers, type of pigs being imported although this does not provide any information on the origin of the pigs only the port or airport at which they arrived. Similarly for pigs being exported the exporter is required to enter the movement from the premises to a specified port or airport.

15. The two movement databases, eAML2 with ScotEID are linked to ensure the capture of cross border movements. It is only possible to view the movement to and from the port of entry rather than original source which poses an issue for disease tracing.

2 Imports

2.1 Imports from 3rd Countries

16. Details of pigs imported into the UK in the period 2014 to 2016 were reported by the APHA in January 2020. Since then, based on the information provided by APHA the number of pigs imported from 3rd countries is shown in Table 13. Live pigs arrived from Canada and the USA for breeding purposes with the table demonstrating that imports have been decreasing since 2016.

Table 13: Number of pigs imported into UK from Third countries in 2016, 2019 and 2020

Country of origin	2016	2019	2020
Canada	360	258	75
USA	151	75	99
Total	511	333	174

Source APHA

2.2 Imports from EU Member States

17. Information from TRACES which covers the UK shows that the bulk of the imports into the UK from EU member States were slaughter pigs from the Republic of Ireland moving into Northern Ireland. In the other categories the main movements of breeding and production pigs were primarily from the Republic of Ireland into Northern Ireland. Details are shown in table 14 with the proviso that whilst the information is obtained from TRACES the accuracy of the information cannot be guaranteed as the information is added to TRACES by third parties. Furthermore, the figures may not relate to actual movements as consignments could be cancelled at short notice or certificates may need to be reissued on occasions.

Table 14: Imports into the UK from EU Member States in 2020

Category of pigs and Country of destination	Number of Consignments	Total Number of Animals
Breeding Pigs	**265**	**16095**
England	83	4723
Northern Ireland	162	11018
Scotland	20	354
Production Pigs	**41**	**14974**
England	2	586
Northern Ireland	39	14388
Other purposes Pigs	**2**	**2**
England	2	2
Slaughter	**2767**	**434696**
England	8	677
Northern Ireland	2759	434019
Grand Total	**3075**	**465767**

Source TRACES

18. High value breeding pigs which include gilts and boars were imported from 7 EU Member State and Norway during 2020. The details are in Table 15.

Table 15: Breeding pigs imported into GB in 2020 from EU Member States and Norway.

Country of origin	Number of pigs
Belgium	7
Denmark	755
France	30
Ireland	4,100
Germany	4
Norway	20
Spain	22
The Netherlands	139
TOTAL	**5,077**

Source APHA

19. The Breeding companies run programmes across Europe and participate in joint programmes with partner companies in Europe as well as owning of some companies. Most import boars for their AI studs. Boars are being imported from Belgium, Canada, Demark, Norway, The Netherlands, and the USA.

20. It is mainly live boars which are being imported with fewer numbers of gilts. The importation of breeding stock is currently of concern amongst the breeding companies as they import high quality genetic breeding stock from North America and Europe. Breeding stock are flown from Canada into Stanstead Airport where there is a BCP. Another company had previously flown imported boars from Canada into Schiphol and then by lorry and boat to the UK but since Brexit will now consider flying future imports into Stanstead. At Stanstead Airport the animals are required to be walked through the control point, which raises concerns about biosecurity especially where pigs of very high value are unloaded and checked. Breeding Companies would prefer not to unload the animals at the BCP. They consider the best option would be to move the animals direct to an approved isolation unit and make the unit a BCP for the purposes of import controls.

21. From 1 January 2021 live animals, including equines and germinal products imported from the EU, will be subject to new import controls which require pre-notification by the importer using the new electronic system -IPAFFS.

22. The NPA Breeding Companies Import Protocol was published February 2019 and is reviewed annually. A requirement is that “Any live pigs to be shipped via P&O Ferries must be booked by the National Pig Association (NPA). P&O Ferries will only transport breeding stock. Other ferry companies might accept pigs, but do not require NPA to book the crossing. As this does not include all the ferry companies the information cannot be used to define exact numbers of imports but is used to inform which types of pigs were imported

3 Exports

3.1 Exports to EU member states from the UK

23. Details of the exports were provided by APHA for 2019 and 2020 using information from TRACES. The EU publication on TRACES movements in 2018 provided the detail for that year. All the consignments and animals for slaughter were exported to Ireland from Northern Ireland

Table 16: Export of pigs from the UK to EU Member States, Ukraine and Belarus

Category of pigs and Country of destination	No of Consignments	Total Number of Animals	No of Consignments	Total Number of Animals	No of Consignments	Total Number of Animals
Year	**2018**	**2018**	**2019**	**2019**	**2020**	**2020**
Breeding Pigs	51	2441	90	6056	119	12919
Production Pigs	1	1	4	418	0	0
Other purposes Pigs	3	4	3	6	1	1
Slaughter	133	13081	152	14969	158	15446
Total	**188**	**17968**	**249**	**21449**	**278**	**28366**

Source APHA

3.2 Exports from GB to non-EU countries

24. Table 17 gives the figures for consignments of pigs exported to third countries and other parts of the UK. Figures for Export EHCs were provided by APHA. These indicate the number of certificates issued, but not the number of animals exported as no record is kept of number of animals exported.

Table 17: Export from the GB to Third Countries, Northern Ireland, Jersey/Guernsey, and the Isle of Man in 2019 and 2020

2019

Destination Country	**EHC Title**	**No. of certificates issued.**
Northern Ireland	Pigs - For Immediate Slaughter	282
Northern Ireland	Pigs to Northern Ireland - For Breeding and Production	14
Ukraine	Pigs to The Ukraine - For Breeding	6
Jersey/Guernsey	Pigs - For Breeding And Production	4
Macedonia	Porcine Animals Intended For Breeding/Production	2
Nigeria	Breeding Pigs	2
Japan	Swine	1

2020

Destination Country	**EHC Title**	**No. of certificates issued.**
Northern Ireland	Pigs - For Immediate Slaughter	180
Northern Ireland	Pigs to Northern Ireland - For Breeding and Production	13
Belarus	Pigs for Breeding and Fattening	10
Ukraine	Pigs to The Ukraine - For Breeding	5
China	Breeding Pigs	4
Japan	Swine	3
India	Live Swine For Breeding Purposes	2
Isle of Man	Porcine Animals - For Breeding	1

Source APHA

4 Movements of pigs to and from Northern Ireland

4.1 Cull sows

25. The Republic of Ireland has one or two slaughterhouses that take cull sows but the throughput is limited. Consequently, cull sows from both Ireland and N Ireland may be sent to abattoirs in GB mainly Cheales in Essex for slaughter. From 2016 to 2020 records indicate that no sows or boars were slaughtered in Northern Ireland. Around 500-600 sows from Ireland are said to be slaughtered each week. The sows arrive on a general licence at Cairnryan and are shipped down to Essex. The figures in table 14 for slaughter pigs imported into England from the Republic of Ireland only number 677 which could indicate that the bulk of the cull sows come either from Northern Ireland or through Northern Ireland from the Republic of Ireland.

4.2 Import of pigs from Northern Ireland

26. Until 31 December 2020 NI put all the details of the export into the TRACES system, but it was not clear where the information went after that or who looked at it. An incident occurred in March 2020 involving potentially infected pigs with PRRS type 2 which is not present in GB. Fortunately, no pigs had entered GB from Northern Ireland but it was found that if such pigs had been imported it would have been very difficult to trace their movements quickly as the communication between TRACES, ScotEID and eAML2 did not appear to be synchronised.

4.3 Movement of finisher pigs to Northern Ireland from GB

27. By reviewing the eAML2 data it was apparent that in the second half of 2019 there was a rise in the number of finisher pigs exported via Cairnryan port, with a probable destination the Cookstown abattoir. It was believed that this was related to the company being unable to export to China and with problems at a GB abattoir. On occasions Northern Ireland has been used as a pressure valve for slaughter when there are issues with abattoirs in England and Scotland. These movements were still occurring in 2020, but at a lower rate.

4.4 Export of pigs to Northern Ireland from GB

28. Table 17 provides details of export of pig consignments for slaughter and for breeding and production in Northern Ireland from GB based on details of EHCs provided by APHA. There is no indication of the number of pigs.

5 Conclusions and recommendations

29. The introduction of the new electronic system (IPAFFS) could provide an opportunity to link the information on imports directly to the new Livestock Information Service (LIS). This would enhance traceability for notifiable and non-notifiable diseases. Better information is also required on numbers of exports from GB.

30. There is considerable concern about the future of imports which are critical for the breeding programme and the continued genetic improvements of the UK national pig herd. Border Control points will be needed in GB to be in place by July 2022 otherwise the companies will have difficulties with imports from Europe especially from partner companies in the EU.

31. Imports of cull sows from Ireland both North and South will continue. Imports of high value breeding stock for the Republic of Ireland will occur with the establishment of an Elite breeding herd in the Republic which will supply nucleus boars.

32. In previous year the around 12,000 parent gilts were exported to the EU mainly Italy and Spain. Exports to the EU have stopped as apart from airports the nearest Ferry port with a BCP is at Santander. Companies are seeing major difficulties with the lack of BCPs which will impact on the export of high-quality genetics to many countries with a consequence that overseas customers will go elsewhere for their genetic stock.

Recommendation 36: The introduction of the new electronic system "Import of products, animals, food and feed system" (IPAFFS) by APHA for recording imports must be directly linked to the new Livestock Information Service (LIS). This is to enhance traceability of imported pigs in the event of notifiable and/or non-notifiable diseases such as PRRS 2.

Recommendation 37: The new LIS could record the details of export movements or alternatively a separate more comprehensive system should be established to identify number and consignments of pigs.

Recommendation 38: An improved system needs to be developed to record and trace pigs arriving from Northern Ireland or the Republic of Ireland via Cairnryan or Fishguard.

Recommendation 39: Consideration should be given to establishing the BCP for imports of breeding pigs from the Republic of Ireland via Fishguard at an isolation unit established by the importing company.

Recommendation 40: Imports of breeding stock via BCPs at airports should be organised so that the pigs do not need to be unloaded and the physical and identify checks carried out at the isolation unit to which the pigs are moved.

Recommendation 41: The BCPs for imports of breeding pigs via European ports could be established inland at an APHA approved isolation unit to which the pigs are moved.

Chapter 10: Electronic Animal Movement Licensing System 2 (eAML2)

1 Introduction

1. Currently eAML2 is part of a suite of web tools offered by AHDB Pork providing both statutory and value-added reporting. These websites are linked through the Pig Hub single sign-on and the Pig Hub API which allows authentication of users and passes details of holdings that the user can access and their authorised access levels for each holding. Whilst the functionality of eAML2 will be replaced by the Livestock Information Service (LIS), it is currently unclear how this will interface with Pig Hub and the other AHDB Pork tools. In addition to the movement details, eAML2 also includes the Food Chain Information within the movement licence and other non-statutory data such as the Red Tractor assurance number.

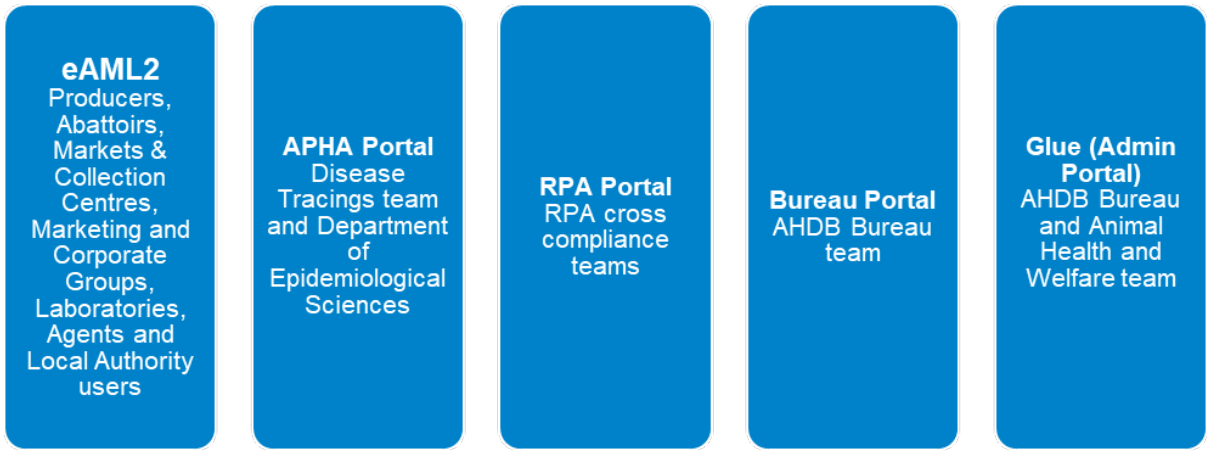
2 eAML2 Users

2. The eAML2 system includes five separate portals allowing different levels of access for different users. Producers, markets and collection centres, corporates and marketing groups, abattoirs, laboratories, showgrounds, and agents, for the purpose of setting up movements and confirming receipt of animals, use the eAML2 website. Local authority staff also uses the main eAML2 website to access a portal which allows them to view any movement and download a list of premises that are non-compliant with legislation. This download is produced weekly.

3. There are two portals which provide the facility to look up any movement, or all movements for a CPH. These are used by the RPA cross-compliance team and APHA for disease tracings. The final portal is used by the bureau and allows them to easily set up movements on behalf of the user.

4. Behind this is “Glue” which is the admin portal and is used for accessing data for Pig Hub and eAML2.

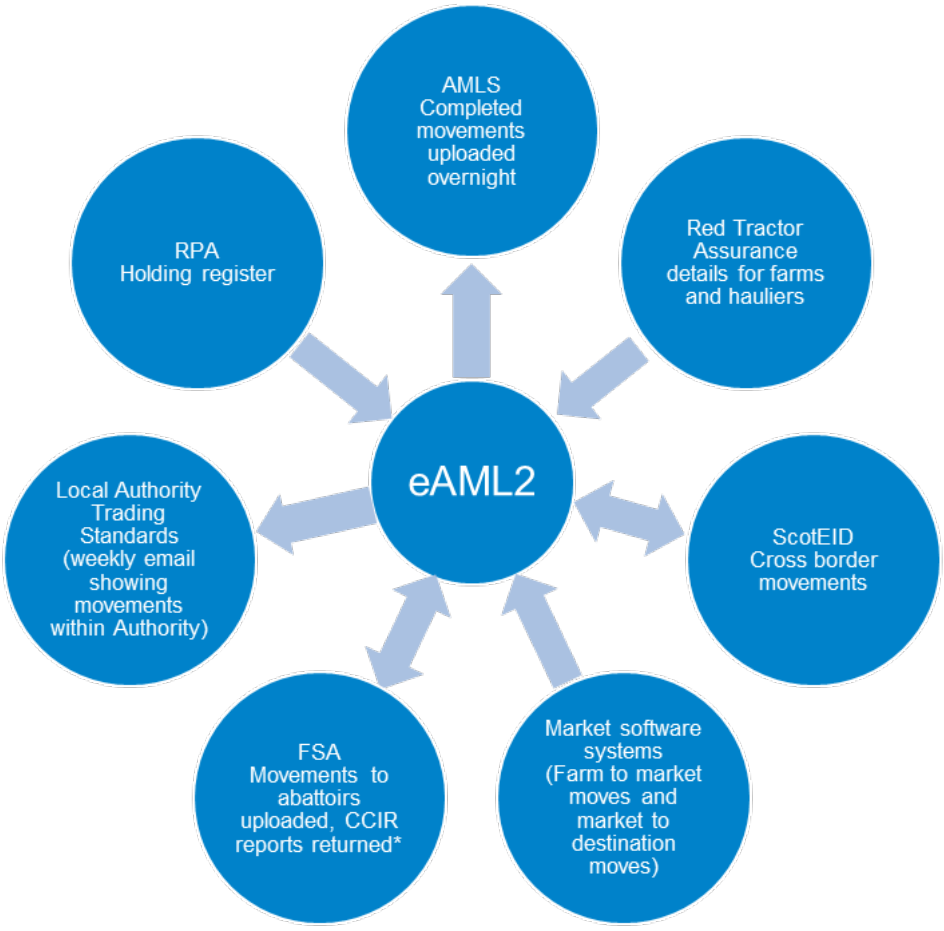
Figure 6: Access portals within eAML2



3. External interfaces

5. There is a Movement Gateway API which is used by market software and ScotEID to import moves into eAML2. The movement gateway also provides the facility to email a csv file containing movement details. This is used by a number of large companies (Corporate groups and marketing groups) to set up movements for multiple farms. Overnight data feeds are received from RPA and Red Tractor. The Red Tractor certification bodies allocate assurance numbers and pass them and the farm details to Red Tractor/QMS. Red Tractor then collates this certification data in their database which is fed into eAML2 (overnight feed). When a movement is created in eAML2, the details on the licence are checked against the Red Tractor database and the assurance number is brought across to the licence – this is done on matching the CPH, postcode and slapmark

Figure 7: Demonstrating the external interfaces between eAML2 and other databases



4. eAML2 data used by AHDB Pork

6. The Animal Health and Welfare team use data from eAML2 for purposes relating to disease prevention and control and for maintaining the service. These activities include:

- Tracing movements following activation of the Disease Charter (these are for selected non-notifiable diseases such as Swine Dysentery)
- Confirming slap marks for pigs assessed via the Pig Health Scheme (moved to the specified abattoir on the day of the assessment)
- Closing holdings where no movements have taken place within the last 2 years

- Confirming that holdings are still active, and possibly should have received Real Welfare assessments or entered eMB data
- Analysing cross border movements to assist with Levy repatriation discussions with Wales and Scotland
- Cross-checking numbers moved to slaughter with Levy team to verify the accuracy of both systems
- Answering queries from APHA, DEFRA and other bodies
- Using number and type of pigs moved to inform analysis of type of business and size
- Using movement data to verify population numbers entered into eMB.

5. eAML2 data used by external organisations

7. A number of other organisations including mainly APHA and EPIC use the movement's databases for a variety of tasks.

- Analysis of pig movements to identify unique holding locations (APHA);
- Design of algorithm to predict herd size and herd type categories based on their movement characteristics (APHA).
- Use of movement data to feed into disease transmission models (ASF and salmonella models have been built) (EPIC and APHA);
- Social network analysis to identify holdings that act as 'hubs' and could be targeted for surveillance (EPIC);
- Analysis of the use of hauliers and addition of haulier information in disease transmission models (EPIC);
- Analysis of pig movements from ports/ airports to identify scale and destination of incoming pigs (APHA).
- Identifying holdings with wild boar by identifying movements of wild boars (APHA).
- Analysis of movement data from markets and shows to identify the number of farms using them and numbers of pigs moved (APHA).
- Ability to plot the location of holdings on maps and identify which holdings are within protection and surveillance zones around it (APHA).
- Use of movement data to predict road journey distances between holdings or to abattoirs (APHA).

6 Conclusions and recommendations

6.1Tracings in the event of a disease outbreak

8. The APHA tracing team based at Cardiff require access to eAML2 in the event of a disease outbreak. Their current access provides large csv files which require a lot of manual filtering; this is a concern for a timely response when tracing a disease outbreak.

Recommendation 42: The output from eAML2 or replacement databases must be in a prescribed format which provides the information needed by APHA for tracing animals.

6.2 Restriction zones

9. AHDB have added value to eAML2 through the ability to identify premises in 3 and 10km zones in the event of a disease outbreak. Although these are not enforceable, they are a useful

communications tool to advise producers if they are attempting to set up a move into or out of a high-risk zone. This is particularly important for PED but has previously been used for outbreaks of Avian Influenza. In the case of a notifiable disease such as ASF the ability to identify premises and restriction zones will be valuable.

Recommendation 43: The functionality for mapping holdings within 3 and 10km restrictions zones for both notifiable and non-notifiable diseases must continue and be improved by the development of LIS

10. ScotEID has a facility to automatically produce outbreak maps and restriction zones which is invaluable for disease control purposes

6.3 Terminology and field headings

11. Different terminology is used across the supply chain and between markets and abattoirs. This also applies between different species where different field headings are used across the species. In the case of pigs there is the need to standardise the names for the different categories e.g. weaner, grower, and rearer often refer to the same category.

Recommendation 44: Specific terminology which relate to pigs and the supply chain must be considered with the development of those parts of LIS

6.4 Data cleansing

12. There is no routine data cleansing or validation of the data input to eAML2. The Bureau will follow up any ‘movements in suspense’. These movements fail to upload to AMLS due to incorrect CPH or address details. These make up approximately 2.5% of pending movements. This presents a challenge in a disease tracing situation as each move would have to be manually checked to confirm if it has taken place or not.

Recommendation 45: Automatic validation programmes should be included in any movement database with output in a format which can either require the pig owner to rectify or the authorities to carry out an investigation.

6.5 Linkages

13. Better linkages between eAML2, TRACES and IPAFFS (or other future import/ export systems) are required to ensure that the movements of imported animals can be traced from origin to destination. Better visibility is also needed on movement data for the devolved organisations.

14. We currently have visibility of a cross border movement into an English farm or abattoir but cannot see the origin details. Although point of origin data are available for movements originating in Scotland there are still shortcomings in the interface between eAML2 and ScotEID, such as the ability to set up post-notified movements from Scotland.

15. Better linkages with fallen stock data are also required either through linking of existing fallen stock databases or an additional function on LIS to record the movement of fallen stock for disease control purposes.

Recommendation 46: Any new movement’s database for England such as LIS must provide better linkages to the movement systems of the Devolved Administrations including Northern Ireland to have full traceability of imported and exported pigs. In addition, links to

the APHA databases for pyramids, pet pigs, import and export as well as the RPA and Red Tractor databases are crucial.

6.6 Output

16. Better programmes to extract, analyse and disseminate information from eAML2 are required as the current system is slow, labour intensive and complicated. Similar requirements will be needed from LIS. The ability to extract information using automated systems to provide users with the detail they need to meet their obligations for disease control, enforcement, food safety and welfare are essential. It is equally important to be able to highlight those areas in the reports which require action by the recipient. The facility for ad-hoc enquiries which is simple and straightforward to use will also be needed.

17. Although weekly reports from eAML2 are shared with local authorities, these are large csv files requiring a significant amount of filtering to find data for the relevant region. Enforcement officers also have to log into their authority access portal to access the information rather receiving a notification when reports are available or a potential breach to the standstill period has occurred. Ideally, LIS should provide a more comprehensive system for regional reporting and alerting local authority when potential breaches to PRIMO legislation occur.

Recommendation 47: Output should be categorised as routine and ad hoc. Routine outputs should be regular and directed to those organisations such as the Local Authorities to enable them to identify issues and take appropriate action rapidly and clearly.

6.7 Scotland and Wales

18. ScotEID is the system for recording pig movements in Scotland. Pre-notification is considered a critical stage in the system being able to provide real-time mapping of all planned and complete movements. The system does not include approved pyramids due to the frequency that supply chains change this information. In the event of a disease outbreak, tracings would be done based on movements between holdings rather than individual animals.

19. Slap marks are a different length and formation to those used in England and this can cause issues when movement data are transposed from ScotEID to eAML2. Future systems need to allow livestock movement history and possibly health status, to move with the animal and not stop at the border. At present this is not possible and is weak point in terms of disease control.

20. ScotEID worked with government on a campaign to engage with small scale producers. This has been successful, and it is believed that the majority are now using the system to record movements and health data where applicable. This is a positive step for disease prevention.

21. EID Cymru (Wales) is being developed on the same platform as ScotEID and will have some similar functions. Currently pig movement data for Wales is stored in eAML2 and consideration must be given as to how this is transferred to EID Cymru. As indicated previously in recommendation 6, future movement systems in England must also be compatible to allow for a smooth transfer of data when dealing with cross border movements.

6.8 Compatibility and exchange of information

22. The geographically diverse nature of the pig industry means that synergy is needed with the development of LIS and EID Cymru. This will prevent loss of data when moving from eAML2 and

ensure consistency for users of the system when registering movements in both England and Wales. This should also apply to any developments with ScotEID.

23. There is a need for future movement systems to facilitate the recording of pig movements in real time. A working group of English, Scottish and Welsh government along with LIS and ScotEID has been formed with the objective of the future movement databases providing a ‘UK view’ of livestock movements.

Recommendation 48: Every effort must be made to ensure that the three systems, LIS, ScotEID and EID Cymru are similar to ensure producers and other users in England, Wales and Scotland are able to understand and work with any of the systems. As legislation is likely to be needed to implement any changes it is equally important that the differences in the statutory orders between the countries are kept to an absolute minimum.

Chapter 11: Specific queries

The objective in this chapter is to answer 5 specific questions posed by Defra in the Terms of Reference. These are shown below.

1.1 Identify any areas of current regime which industry consider lack clarity (explain why) and might require further consideration to clarify or potentially (subject to disease control safeguards) review.

1. There is a lack of clarity about the structure of pyramids and the interactions between the different levels. Some of the PRIMO requirements were considered to be vague and open to interpretation, which means it was not always clear to the producer on how to meet the requirements for approval. More clarification is needed on the rules for the pyramids in terms of movements within, into and out of pyramids.

2. A number of instances were reported of an inconsistent application of the rules. APHA vets inspecting farms need to apply the rules in a uniform manner. The publication of a set standard of guidelines would be helpful as there do not appear to be a list of the checks which are carried out.

3. A random audit in 2019 into pyramid approvals recommended more training and a revamp of the instructions. This has been completed and the new instructions for guidance to APHA staff are to be issued in the near future. These should be provided to the industry for guidance and information. It has also been suggested that not all APHA staff are fully au fait with the rules applying to pyramids especially the need for movement records to be entered in eAML2 for all pyramid movements

1.2 Identify any areas of non-compliance across all sectors and provide an explanation of why these non-compliances occur and the scale of them. Are they isolated or is there evidence of significant non-compliance? Defra are keen to understand areas of non-compliance so that they can address them either by clearer guidance or amending the rules where that may be possible (no disease control impacts) as opposed to taking action over the non-compliances.

4. There is some concern that not all eligible movements trigger the full 20-daystandstill. The EPIC reports suggest a relatively high level of non-compliance, but these are based an analysis of the movement data rather than investigations on farms. It is not clear whether isolation units for movements on or off a holding are recorded in the various analyses. This is critical if these movements are into 20-day isolation as it enables pigs to move off the holding within the 20 days. It is also feasible that misunderstandings by producers on what is or is not a pyramid move could lead to the assumption that derogation for incoming pigs exists. The view from the industry was that non-compliance was not a problem, but that clearer guidance is required. Future developments of the animal movement databases must consider a need to provide regular and clear outputs on standstill contraventions to enable the enforcement authorities to take action though advice and guidance rather than prosecution.

5. The various movement contraventions within, into and out of pyramids as shown in the EPIC papers do not appear to take account of the isolation facility to allow movements into the multiplier and weaner-breeder herds without triggering the 20-daystandstill. Movements from all tiers in a pyramid can go to non pyramid holdings where they will trigger the standstill unless isolated. Finishing units receiving pigs from weaner-breeder/rearers are not approved under PRIMO and can sell pigs to other holding again with the imposition of the standstill on the recipient

holding. In this circumstance provided the standstill is implemented and the isolation premises are approved no contravention has occurred. Any movement from outside into a pyramid holding will require either isolation or the imposition of the 20-day standstill on the recipient herd.

6. The industry has changed with the increasing size of the rearing and finishing units in some of the production systems. In order to fill a 2,000-place rearing unit weaned piglets may have to be moved from number of weaner breeding units. In some production systems these will be moved in batches every 21 days so no derogation will be needed whereas in continuous flow systems pigs may not move off the holding for 20 days unless there is derogation. The problem is that mixing batches is not good for disease prevention or control. It appears that the movement of batches of pigs from more than 2 weaner-breeder farms into a rearing unit may contravene PRIMO approval. This is likely to become an increasing problem for certain sections of the industry and clear communication is required.

7. Non-compliance with the recording and identification requirements may occur but in the absence of any details it is difficult to estimate the levels of non-compliance. Most pig owners would wish to comply with legislation. To ensure registration education and raising awareness are the important factors rather than legislation.

1.3 Provide a view on likely future movement trends, including in outdoor practices, and make proposals on how such trends might be accommodated within a revised authorisation procedure for such networks

8. There are only three main breeding companies operating in the UK. The industry has undergone considerable consolidation over the past 20 years, and this is likely to continue in the future with more worldwide partnerships. It is likely that the breeding companies will continue to need the derogation from the 20-day standstill in order to provide the numbers of replacement gilts which will be required via grow out and gilt mating units. The three main genetics companies based in England have units in Scotland and have established cross border pyramids.

9. For outdoor production herds it is expected that the industry will continue to consolidate into the three integrators: Cranswick, Karro and Pilgrim's Pride. It is unclear how much more consolidation could take place in the UK. Some consider that there is little scope to expand outdoor units' others expect the outdoor industry to continue to expand, particularly because of consumer interest in welfare.

10. The view of the industry's future is that the large integrators will continue as will small producers supplying local and niche markets. The main impact will be on the middle group of small independent producers with 500 to 750 sows who will find it increasingly difficult to obtain a reasonable price for their pigs. Almost all producers will already have a contract to supply pigs to particular processors – some will supply several. The decision on whether to become a contractor where the integrator/processor owns the pigs and the producer just rears them for someone else will take place over a much longer time period, especially in the indoor sector. Many of these producers will enter contracts with the larger companies to reduce risk and to provide security for their business with a guaranteed income but unfortunately many are finding that this does not in fact reduce risk or provide financial security for their businesses.

11. Most of the breeding companies and integrators own the pigs but not the holdings on which they are resident. Most holding owners are under contracts of varying length and one consequence this is that the holdings within a pyramid can frequently change. This means that to keep an up-to-date tally of PRIMO approved holdings is extremely difficult. Not only do the

production holdings frequently change but also the land parcels on which the outdoor pigs are resident can change due to the need to rotate the land.

12. A number of integrator and commercial companies do not need the PRIMO derogation and wherever possible they should be removed from the approval process. In terms of movements the smaller producers are often farrow-to-finish with no requirements for the standstill derogation. Others who move only pigs to finishing units will require a derogation if they import replacement gilts into their breeding herds. The trend to larger integrated companies may see the need for the derogation to enable movements from the weaner-breeder herds to the rearing and finishing sites if separate. Companies which have an all in all out system for their weaner-breeders would not need the derogation and likewise those companies which move pigs in batches at intervals of 21 days would not need the derogation.

13. Removal of the derogation would involve a major restructuring of the way which some sectors of the industry operated. Any such changes would need to take place over a sufficient timespan to allow the companies to adapt.

14. Many of the companies already have internal pyramids which they have established as a disease control measure both to minimise the potential spread of disease between the pyramids but also to provide some protection if a notifiable disease should occur in one of their pyramids. It would be feasible to develop this into a revised pyramid structure built on both the registered pyramids and these informal pyramids with more responsibility on the breeding companies and integrators to develop, maintain and enforce their own pyramids. The role of government would be to audit the process and to utilise the various databases to ensure compliance with the standstill requirements.

1.4 Identify possible effects should any of the existing trading practices within, among and beyond the networks be restricted (e.g., lateral movements; how does degree of movement differ between tiers).

15. The derogation from the 20-day standstill is important where there is weekly movement of pigs off premises which also receive pigs onto the premises weekly. Specifically, if gilts are moved onto weaner-breeder units or where there is a 3 site system for growing and finishing. If this derogation was removed the industry would need to restructure although this would not affect all the large commercial companies some of whom already operate batch systems every 21 days. Nor would it affect the farrow-to-finish units or those producers who only import the occasional gilt into their breeding herds as the pigs could go into isolation for the 20 days before movement. In any event it is always good practice to isolate incoming breeding stock to prevent the introduction of pig diseases.

16. It is clear that lateral movements occur but provided these are into isolation for 20 days the potential disease risks are considerably reduced. However, it would be possible to block all moves from outside a pyramid into a pyramid without a specific licence and confirmation of movement to an APHA approved isolation unit. It is essential that isolation units are identified on the movements' databases (eAML2 and ScotEID) even if they are on the farm so that movements can be monitored. Alternatively, holdings with approved isolation units could be identified on the database and checks made re compliance with the approval for the isolation and of the movements in and out of the isolation unit.

17. Producers should be encouraged not to use PRIMO approval to avoid the 20-day standstill but to develop an approach which utilises the isolation route. In terms of good management

practice isolation in any circumstance is important to ensure that the introduction of gilts into a weaner-breeder herd will pose a minimal risk of disease entry. In future any application for PRIMO approval or for preapproval as a PRIMO approved weaner-breeder or rearer should provide a detailed reason why the derogation to the 20-daystandstill was required and why the isolation route could not be used. It is important to clarify the reasons why derogations would be granted, and it would be helpful to work with the industry to produce a list of approved reasons for derogations under both the PRIMO and the Disease Control Order legislation

1.5 Identify any movements that are currently restricted within current networks, but which industry would like to be allowed to make for commercial benefit.

18. The industry did not raise any additional movements that they wished to have as they were content with the current arrangements. They commented that the present system worked well and there was concern should there be any changes. It was considered that PRIMO works quite well and meets a need of the industry.

Appendices

Appendix 1: Review of GB Pig industry structure

Provision of a detailed report to inform policy review of current PRIMO provisions in England

The Report will:

1. Identify any areas of current regime which industry consider lack clarity (explain why) and might require further consideration to clarify or potentially (subject to disease control safeguards) review.

2. Identify any areas of non-compliance across all sectors and provide an explanation of why these non-compliances occur and the scale of them. Are they isolated or is there evidence of significant non-compliance? Defra are keen to understand areas of non-compliance so that they can address them either by clearer guidance or amending the rules where that may be possible (no disease control impacts) as opposed to taking action over the non-compliances.

Pig Industry

3. Explore the sector as a whole – 'commercial', 'small-holdings', and 'pets', the size and structure of each and the inter-relations.

4. Summarise the structure of the commercial pig sector (size of national herd, types of unit (e.g. breeding, rearing and finishing etc.), what these units produce and typical unit sizes (pig population/cycles and geographical extent (bearing in mind 10-mile rule) for each unit type Distinguishing breeding companies and production/finishing companies, where these differ. And indoor vs outdoor production (historic context (assume a move to more outdoor production – welfare)

5. Summarise existing outdoor production practices.

6. Summary of how the supply and production of rare breeds operates and its scale of operation.

7. Summary of the way the smaller or non-commercial pig sectors operates producers not formally integrated in wider networks; small-holders; pet pigs (an increasing trend). (2018 census data indicates there are over 2,000 holdings with less than 4 pigs, but we suspect that there may be many unregistered keepers of small numbers of pigs (micro pigs, pet pigs etc.). The supply and exchange of these via markets, shops etc., also import/export

Movement Practices

8. Summarise current movement practices of commercial pig sector. Distinguishing movements within integrated networks from movements between and beyond them (including imports, AI, vet practices etc.). And distinguishing breeding companies (maybe 20 such) from the production companies they may supply in the overall network. And considering slaughter and cull movements, and imports/exports.

9. Be aware of the work currently commissioned with EPIC looking at some of this and beginning to report back to Defra/DAs/AHDB.

10. Summarise, with assistance of APHA, what the current arrangements are for the ‘approved’ parts of those networks (using illustrative examples) and any differences in perception of these requirements by the commercial pig sector.

11. Provide a view on likely future movement trends, including in outdoor practices, and make proposals on how such trends might be accommodated within a revised authorisation procedure for such networks.

12. Identify possible effects should any of the existing trading practices within, among and beyond the networks be restricted (e.g. lateral movements; how does degree of movement differ between tiers).

13. Identify any movements that are currently restricted within current networks, but which industry would like to be allowed to make for commercial benefit.

Identification

14. In the context of the commercial pig sector consider current ID options and how these support traceability throughout the supply chain and include feedback from industry on the current ID requirements.

15. Provide industry view on potential electronic identification of pigs (including preferred technology UHF vs LF) and whether there is sufficient demand to warrant policy developing a voluntary official ID regime for pigs.

Import/Export

16. Scale of imports/exports in the different sectors, and its purpose (e.g. breeding stock, production, and slaughter and cull sows). Distinguishing NI from other countries

Assurance Schemes

17. What role assurance schemes play in all the different pig sectors and proportion of industry membership?

Appendix 2: Oral and Written Evidence Submitted to the Review

Animal and Plant Health Authority (APHA)

British Pig Association (BPA)

Centre of Expertise on Animal Disease Outbreaks Scotland (EPIC)

Cheale Meats

Cranswick PLC

Department for Environment, Food and Rural Affairs (Defra)

Genus PIC

JSR Farms

Karro Food Group

Livestock Auctioneers Association (LAA)

Meryl Ward- Ermine Farms

National Pig Association (NPA)

Pig Veterinary Society (PVS)

Pilgrim’s Pride

Rattlerow Farms Ltd

Red Tractor

Simon J Watchorn

Scottish Government

Scottish Pig Producers

Trading Standards

Quality Meat Scotland (QMS)

Welsh Government

Appendix 3: Detail of pigs and pig holding in England in 2018/19

Livestock type: Female pig breeding herd

Size band	2018 Number of holdings (thousand)	2018 Number of livestock (thousand)	2019 Number of holdings (thousand)	2019 Number of livestock (thousand)
1 to 4 breeding pigs	2.7	5	2.5	4
5 to 24	0.9	10	0.8	9
25 to 99	0.3	17	0.3	16
100 and over	0.6	295	0.6	298
Total	**4.6**	**327**	**4.2**	**327**
Average number of female breeding pigs	NA	71	NA	78
Average number of female breeding pigs on holdings with >=5 female breeding pigs	NA	171	NA	190

Livestock type: Fattening pigs (d)

Size band	2018 Number of holdings (thousand)	2018 Number of livestock (thousand)	2019 Number of holdings (thousand)	2019 Number of livestock (thousand)
1 to 9 fattening pigs	2.3	9	2.0	8
10 to 49	1.5	34	1.5	35
50 to 299	0.9	114	0.9	117
300 to 999	0.6	369	0.6	392
1,000 and over	1.1	3,105	1.1	3,098
Total	**6.4**	**3,630**	**6.2**	**3,650**
Average number of fattening pigs	NA	564	NA	593
Average number of fattening pigs on holdings with >=10 fattening pigs	NA	885	NA	876

Total pigs

Size band	2018 Number of holdings (thousand)	2018 Number of livestock (thousand)	2019 Number of holdings (thousand)	2019 Number of livestock (thousand)
1 to 9 pigs	3.6	12	3.1	11
10 to 49	1.8	43	1.8	42
50 to 299	1.0	128	1.0	130
300 to 999	0.6	372	0.6	386
1,000 and over	1.2	3,484	1.2	3,491
Total	**8.2**	**4,038**	**7.7**	**4,060**
Average number of pigs	NA	494	NA	529
Average number of pigs on holdings with >=10 pigs	NA	873	NA	881

Source: Extract from structure-june-eng-farmsize-15oct2020
https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june
Accessed 20 February 2021

Appendix 4: Categories of herds in Approved Pyramids: with thanks to APHA

Nucleus Herd

This is a closed herd. Breeding stock are genetically termed Great Grandparents and are at the top of the pyramid with the highest standards of biosecurity and health status. Virtually a closed herd, new genetics supplied by germ plasm or boars via isolation. Nucleus herds produce replacement breeding stock (Grandparents) for Multiplier herds. Pigs not selected for breeding go to slaughter.

Multiplier Herd

This herd breeds and multiplies replacement breeding stock. The pigs are genetically termed Grandparent stock. Incoming stock are from a named Nucleus herd, or from elsewhere via isolation. The end product is replacement breeding Boars and Gilts to supply commercial breeding herds. Pigs not selected for breeding go to slaughter.

Nucleus Multiplier Herd

This is a closed herd similar to a Nucleus. The conditions for approval are the same as for a Nucleus. However, two generations of breeding stock are present, GGP and GP. As a Multiplier these herds primarily produce replacement breeding stock for commercial breeding herds. Pigs not selected for breeding go to slaughter.

Grow-Out (Nucleus, Nucleus-Multiplier or Multiplier Grow-Out)

These receive weaned pigs from Nucleus or Multiplier herds for rearing before onward movement down the pyramid for breeding. They have a separate registration (CPH, location, herd, facility) on Sam, as well as a separate approval and are considered a separate entity for movement reporting purposes, with a separate herd mark. Though not strictly breeding herds have the same health status and require the same biosecurity standards as the Nucleus and Multiplier holdings. In some cases, the rearing of pigs is divided into first-stage Grow-Out and second-stage Grow-Out on separate premises.

Gilt Mating Unit

These are herds where young gilts (normally from a Multiplier herd or an associated Grow-Out) are reared and then mated so that batches of pregnant gilts can be sent to customers (normally Weaner-Breeders) rather than mating taking place at the destination. The recipients are often outdoor breeding herds, often in the set-up period for a new herd. Several batches follow one another at intervals until the new herd is fully populated. They are given a separate approval from the associated Multiplier herd, have a separate registration on Sam and are listed separately on the Nucleus-Multiplier sheet.

Multiplier-Weaner-breeder Unit

Units where grandparent stock is also bred on site together with commercial breeding stock to limit or even eliminate the incoming movements of replacement stock. Two generations of pigs coexist in the same unit.

Weaner-breeder Herds

The stock are termed Parent stock. Farrowing (and mating, unless gilts are supplied in-pig from a gilt-mating unit) and rearing generally takes place on one premises. Incoming stock are usually from the Multiplier herd level, but herds may also obtain replacements from a Nucleus herd or equivalent Grow-Out herd or gilt-mating unit. These produce weaned piglets for sale or movement to rearing and/or finishing herds. Because they often need to sell or move pigs off to finishing herds on a weekly basis, weaner-breeder herds make up the largest number of herds requiring the PRIMO exemption from the 20-daystandstill under the Disease Control Orders. The weaner-breeder approval allows them to bring on their replacement breeding stock without losing the opportunity to sell piglets each week to finishing herds. Many Weaner-Breeders are now outdoor breeding herds. They may be independently owned or, more often, are linked to a production company pig scheme.

The turnover of breeding stock can be up to 50% on an annual basis. This means that a six hundred sow outdoor breeding herd will be required to bring on up to 300 replacement breeding gilts (Parent stock) from the Multiplier over the course of a year. Therefore, they need an exemption to the 20-daystandstill to operate. However, not all farms which are breeding weaners will apply for the exemption. For example, a farm which raises all progeny to slaughter weight does not need an exemption and can therefore obtain replacement breeding stock from any suitable source, whether or not it is listed in an approved pyramid.

Weaner-Rearer Herds

Also known as a Rearer or Nursery. No breeding takes place in these herds. Incoming stock are weaned piglets (7 - 10kg) from weaner-breeder herds and are simply grown on to the next stage (30 to 35kg) which is then moved to finisher premises. Rearing herds can be run on a continuous, or all in/all out batch system. Continuous systems receive small piglets each week and move larger pigs off each week and therefore require to be approved under PRIMO to avoid standstill and must source weaners from holdings which are themselves approved (weaner-breeders). They are the equivalent of the grow-out units in the higher tiers.

Isolation premises

These allow approved holdings to occasionally bring in new breeding stock while still remaining compliant with PRIMO approval. Isolation is itself approved, to the same standards. Currently there are 4 isolation units listed on the NM list but there will be a lot more isolation units approved for the weaner-breeder /rearer sites. Isolation can be achieved by arrangements at the ultimate destination itself (i.e., animal arrives but is kept separate for the duration) or arrangements involving a separately registered ‘isolation’ farm; it’s the latter that score as separate approvals. This needs standardising.

Finishing herds

These are effectively below each pyramid. All moves from these are to slaughter so they do not have to adhere to standstill. They are effectively subject to regular surveillance, at abattoirs, so that the risk they inherit from the pyramid does not need to be managed by an approval process.

Appendix 5: Export of pig ears

Introduction

1 Recommendation 11 in the report indicates that an assessment of potential loss to the industry is required if compulsory ear tagging were to be introduced. The details below were obtained from Defra export data and are accurate as of 4th February 2002 but it must be recognised that market conditions may change.

2 The UK kills 10 million pigs per year, providing 20 million ears, 70% of which are exported to China, usually as whole heads. Ears weigh approximately 200g (100 each) resulting in approximately 1,400 tonnes of ears exported to China each year.

3 Cull sow heads which often have ears with holes or tag damage are currently sent to the EU with no problems usually as the heads are used for catering or manufacturing.

Approved plants

3 Nine plants are approved for China export which will cover the majority of the UK Kill:

- Karro 2 plants
- Cranswick 3 plants
- Pilgrim's Pride 4 plants +1 additional cutting plant.

Grading

4 There are two grades of ears:

Grade A ears (no blemishes, damage, or holes) are worth £1500/t

Grade B ears (holes or tears from ear tagging) are worth £1300/t

There is a potential loss of £200/t for damaged ears.

Grade B ears would not be sold in retail as whole ears and would be used in catering or manufacturing.

Conclusions

5 The current trade is worth around £2.7 million (AHDB July 2021)

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http://apha.defra.gov.uk/documents/surveillance/diseases/lddg-pig-pop-report-2021.pdf

Appendix 7: Glossary

APHA: Animal and Plant Health Agency

BCP: Border Control Post

BPA: British Pig Association

CPH: County Parish Holding

eAML2: Electronic Animal Movement Licensing system

EHC: Export Health Certificates

EID: Electronic Identification

EPIC: Centre of Expertise on Animal Disease outbreaks (formerly Epidemiology, Population health and Infectious diseases Control)

DCO Disease Control (England) Order as amended for England, also for Wales and Scotland

GGP: Great Grandparent

GP: Grand Parent

IPAFFS: Import of products, animals, food and feed system

ITAHC: Intra Trade Animal Health Certificate

LAA: Livestock Auctioneers Association

LF: Low Frequency

LIP: Livestock Information Programme

LIS: Livestock Information Service

NM Sheet: Nucleus and Multiplier Sheet

NPA: National Pig Association

PHWC: Pig Health and Welfare Council

PRIMO: Pigs (Records, Identification and Movement) Order 2011s as amended" for England, Wales and Scotland

QMS: Quality Meat Scotland

RBST: Rare Breed Survival Trust

RFID: Radio Frequency Identifier

RPA: Rural Payments Agency

RPID: Rural Payments and Inspections Directorate

RT: Red Tractor Assurance Scheme

ScotEID: Scottish Livestock Electronic Identification

TLA: Temporary Land Association

TRACES: Trade Control and Expert System

UHF: Ultra High Frequency

