

FARM ASSURANCE SCHEMES & ANIMAL WELFARE

How the standards compare
2012



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1. INTRODUCTION

Consumers are increasingly concerned about the welfare of food-producing animals. A Eurobarometer survey of consumer attitudes to the welfare of farmed animals, published by the EU Health and Consumer Protection Directorate in 2007, indicates that UK consumers attach a high level of importance to the protection of farmed animal welfare (average rating of 7.8 out of 10) and that 68% believe the welfare protection of farmed animals in the UK needs to be improved (European Commission, 2007). 56% of UK respondents say they would be prepared to change their usual place of shopping in order to be able to buy more animal welfare-friendly products (*Ibid.*).

A survey of perceptions and priorities of consumers on issues of sustainable food and farming and ethical supply chain management, conducted by the Plough to Plate Group, found that UK consumers ranked “*raising standards of animal welfare*” as their top future priority, ahead of the environment, local sourcing and fairer prices for producers (PPG, 2007). A Eurobarometer survey of concerns about food-related risks, published by the European Food Safety Authority in 2010, found that 67% of those surveyed in the UK were worried about the welfare of farmed animals, a higher percentage than for any of the other issues covered, including the quality and freshness of food, food poisoning, residues of pesticides, antibiotics, hormones or pollutants, food additives, weight gain and diet-related disease (EFSA, 2010).

However, a lack of clear information on the welfare standards for the animals used in the production of different products is a significant barrier to ethical purchasing and consumer choice. In a 2005 Eurobarometer survey of attitudes of consumers towards the welfare of farmed animals (European Commission, 2005), 35% of UK respondents state that they can very rarely or never identify from the label if the animal products they are buying come from a welfare-friendly production system. A further 30% state that they can only identify some of the time if the product is from a welfare-friendly production system. Only 26% feel confident that they can identify most of the time if the product is from a welfare-friendly production system.

A further Eurobarometer survey in 2007 found that the situation has not improved. 65% of UK respondents believe that customers cannot easily find information on products sourced from welfare-friendly production systems in shops and supermarkets; 12% tend to agree that it is easy for customers to find information on welfare-friendly products, whilst only 16% feel sure that it is easy for customers to find information on welfare-friendly products. The results of these surveys indicate that there is a lack of clear information on many products and that many consumers in the UK are unable to make informed decisions with regard to welfare standards when purchasing animal products.

It is not surprising that consumers are confused by the labelling of animal products: Most animals farmed in the UK are reared in accordance with the standards of a farm assurance scheme and all of these schemes claim to ensure high standards of animal welfare, yet they vary greatly in their requirements for how animals are kept and cared for. This analysis looks in detail at the welfare standards of the major farm assurance schemes in England and Scotland to see how they compare to each other and to standard industry practice.¹

The species covered by the analysis are:

- Pigs
- Dairy cattle
- Beef cattle
- Sheep
- Broiler (meat) chickens
- Turkeys
- Laying hens
- Farmed salmon

The schemes included in the analysis are:

- **Assured Food Standards Standards (Red Tractor Farm Assurance)**
 - **Assured British Pigs (ABP) (now Red Tractor Farm Assurance Pigs Scheme)**
 - **Assured British Meat (ABM) (beef cattle and sheep) (Red Tractor Farm Assurance Beef and Lamb Scheme)**

¹ Throughout this report, the term ‘standard industry practice’ refers to the minimum welfare standards commonly adopted within the UK farming industry. This is largely defined by minimum legislative requirements but also incorporates:

- common practices that may not meet minimum legal requirements (e.g. a majority of UK pig producers dock the tails of all of their pigs despite the prohibition of routine tail-docking by EU legislation), and
- practices adopted by a majority of producers that may go beyond minimum legal requirements (e.g. castration of male pigs is not commonly performed in the UK although it is permitted by legislation).

- **Assured Dairy Farms (ADF) (now Red Tractor Farm Assurance Dairy Scheme)**
- **Assured Chicken Production (ACP) (now Red Tractor Farm Assurance Poultry Scheme)**
- **Quality British Turkey (QBT)**
- **British Lion Quality Code of Practice (Lion Code)** (laying hens)
- **Code of Good Practice for Scottish Finfish Aquaculture (CoGP)** (salmon)
- **Quality Meat Scotland (QMS)** (pigs, beef cattle and sheep)
- **RSPCA Freedom Food (RSPCA)** (pigs, dairy cattle, beef cattle, sheep, broiler chickens, turkeys, laying hens and salmon)
- **Scottish Organic Producers Association (SOPA)** (pigs, dairy cattle, beef cattle, sheep, broiler chickens, turkeys and laying hens)
- **Soil Association (SA)** (pigs, dairy cattle, beef cattle, sheep, broiler chickens, turkeys, laying hens and salmon).

Since completing our comparison analysis, several of the schemes have revised their standards. Appendix 0 details the versions of the standards used in our analysis and any subsequent updates, which have been reviewed. We have adjusted the report in accordance with the revisions where appropriate.

1.1 Assured Food Standards

Assured Food Standards is the umbrella industry scheme which includes Assured British Pigs, Assured British Meat (beef and lamb), Assured Dairy Farms, Assured Chicken Production and Quality British Turkey. In 2006/07, 95% of poultry and dairy cattle, 92% of pigs, 85% of beef cattle and 65% of sheep were farmed under the Assured Food Standards schemes, which market their products under the 'Red Tractor' logo (Defra, 2008).

What the Assured Food Standards scheme says about its animal welfare standards:

On the Assured Food Standards website, "animal welfare" is listed as number three of "ten good reasons to choose food and drink bearing the Red Tractor logo" and it states: "We have detailed standards to help protect the health and welfare of farm animals. Red Tractor farmers are required to provide fresh water and a healthy diet at all times, with adequate shelter and resting areas for their livestock. Providing adequate space is also emphasised, to give animals and birds the freedom to express their natural behaviour."

1.2 British Lion Quality Code of Practice

The British Lion Quality Code of Practice was launched in 1998 and its primary focus is on food safety, including compulsory vaccination against *Salmonella enteritidis* of all pullets destined for Lion egg-producing flocks as well as on-farm and packing station hygiene controls. Approximately 85% of UK eggs are now produced to British Lion Quality standards.

What the Lion Egg scheme says about its animal welfare standards:

On the Lion Eggs website, it states: "The Code includes a number of animal welfare requirements which exceed those required by law. These include the banning of induced moulting, additional staff training procedures and procedures for the handling of end-of-lay hens in accordance with the Joint Industry Welfare Guide to the Handling of End of Lay Hens and Breeders. The Code mirrors the RSPCA's Freedom Food standards for free range and barn egg production."

1.3 Code of Good Practice for Scottish Finfish Aquaculture

The Scottish Salmon Producers' Organisation (SSPO) is the trade association for the salmon farming industry in Scotland. 95% of the tonnage of Scottish salmon production is in its membership. The Code of Good Practice for Scottish Finfish Aquaculture (CoGP) is the entry point for membership of the SSPO.

What the Scottish Salmon scheme says about its animal welfare standards:

On the Scottish Salmon Producers' Organisation website, it states: "Members of Scottish Salmon Producers' Organisation are at the forefront of technological and husbandry research and development, as well as being world leaders in animal welfare." "Animal health and welfare" is listed as one of the "wider benefits of salmon farming."

1.4 Quality Meat Scotland

Quality Meat Scotland is the public body responsible for helping the Scottish red meat sector improve its efficiency and profitability, and maximise its contribution to Scotland's economy. They market the Protected Geographical Indicator (PGI) labelled Scotch Beef and Scotch Lamb brands in the UK and abroad and promote Scottish pork products under the Specially Selected Pork banner. QMS assurance schemes cover more than 90% of livestock farmed for meat in Scotland.

What the Quality Meat Scotland scheme says about its animal welfare standards:

On the QMS website, it states that their schemes *"offer consumers the legal guarantee that the meat they buy has come from animals that have spent their whole lives being raised to some of the world's strictest standards."*

1.5 RSPCA Freedom Food

The RSPCA Freedom Food scheme was set up specifically to promote higher standards of animal welfare. In 2007, the RSPCA Freedom Food scheme accounted for the following proportions of the UK market: 52.1% of laying hens, 24.8% of ducks, 14.5% of pigs, 5.5% of broiler chickens, 2.2% of turkeys, 1.0% of dairy cattle and 0.5% of beef cattle and sheep (Defra, 2008).

What the RSPCA Freedom Food scheme says about its animal welfare standards:

On the RSPCA website, it states that the Freedom Food scheme *"is the only UK farm assurance scheme to focus solely on improving the welfare of farm animals reared for food... Whether it is an egg-laying hen, a salmon, or a sheep (or for that matter, any other animal covered by the scheme), we believe that animals reared for food deserve a happy, healthy life. This means providing them with an environment that meets their needs – needs not confined to space, food and water but psychological needs too. So providing a stimulating environment that enables the animals to exhibit their natural behaviour is very important."*

1.6 Scottish Organic Producers Association

The Scottish Organic Producers Association is Scotland's largest organic certification body and exists to promote the sustainable growth of its members' farming businesses. SOPA was established to provide a focus for organic food producers across Scotland.

What the Scottish Organic Producers Association scheme says about its animal welfare standards:

On the SOPA website, it states that organic standards *"aim to keep livestock in good health by promoting high standards of animal welfare, appropriate diets and good day-to-day care of stock... There are requirements to ensure humane conditions for animals in transport and at slaughter."*

1.7 Soil Association

The Soil Association was founded in 1946 by a group of farmers, scientists and nutritionists who observed a direct connection between farming practice and plant, animal, human and environmental health. The Soil Association is the UK's leading organic organisation, with over 200 staff based in Bristol and Edinburgh and working as certification inspectors across the country.

What the Soil Association scheme says about its animal welfare standards:

On the Soil Association website, it states: *"The Soil Association has probably the highest and most comprehensive standards for organic production and processing in the world. Our standards not only meet the UK government's minimum requirements [for organic farming] but in many areas are higher. This is particularly true with animal welfare (for example, poultry)"*.

2. METHODOLOGY

2.1 MEASURING ANIMAL WELFARE

Animal welfare refers to the well-being of the individual animal. It includes animal health and encompasses both the physical and psychological state of the animal. The welfare of an animal can be described as good or high if the individual is fit, healthy and has a good quality of life, which encompasses both freedom from suffering and the opportunity to experience positive feelings of well-being.

The 'Five Freedoms' were developed by the Farm Animal Welfare Council (FAWC), the UK government's advisory body on farm animal welfare, and have been widely used as a framework for animal welfare legislation and assurance scheme standards.

The Five Freedoms (FAWC, 1992):

1. Freedom from hunger and thirst

by ready access to fresh water and a diet to maintain full health and vigour

2. Freedom from discomfort

by providing an appropriate environment including shelter and a comfortable resting area

3. Freedom from pain, injury or disease

by prevention or rapid diagnosis and treatment

4. Freedom to express normal behaviour

by providing sufficient space, proper facilities and company of the animal's own kind

5. Freedom from fear & distress

by ensuring conditions and treatment which avoid mental suffering.

The 'Five Freedoms' are based on the avoidance of unnecessary suffering and the provision of needs. More recently, FAWC has proposed that the welfare of farmed animals should be defined in terms of an animal's quality of life over their lifetime on the farm, during transport, at gatherings and at the abattoir, including the manner of their death (FAWC, 2009). FAWC proposes that an animal's quality of life can be classified as "a life not worth living", "a life worth living" and "a good life" and that giving an animal a life worth living requires good husbandry, considerate handling and transport, humane slaughter and skilled and conscientious stockmen (*Ibid.*).

Clearly, legislation should aim to ensure that all farmed animals are given a life worth living. Assurance schemes have an important role to

play in promoting welfare standards above the legal minimum, giving consumers the confidence to buy meat, milk and eggs knowing that the animals have had a good life.

Welfare can be poor in any farming system if stockmanship is poor. However, systems vary in their potential to provide good welfare. Even if stockmanship is good, welfare is likely to be poor in confinement systems that severely restrict freedom of movement or in barren overcrowded conditions that limit behavioural expression.

A farming system that provides for behavioural freedom without compromising health can be described as having high welfare potential. Major concerns for animal welfare arise from farming systems with low welfare potential, i.e. those that fail to meet the behavioural and physical needs of the animal and are therefore likely to cause suffering. The ability of a system to provide good welfare is determined by factors that are built into the system. Building blocks of a good system include the provision of sufficient living space and access to resources to meet the needs of the animals.

Whilst it is essential to set high input standards to ensure livestock production systems have high welfare potential, it is also important to monitor welfare outcomes to assess the extent to which that potential is realised. Examples of welfare outcomes include levels of mortality, disease, lameness, injuries and abnormal behaviours such as stereotypies (repetitive behaviours with no apparent function which are considered to indicate poor welfare), as well as positive measures such as the occurrence of play behaviour. Welfare outcomes reflect the overall performance of the system, which will be influenced both by the welfare potential of the system and by the level of human management skill applied to it.

2.2 SCORING SYSTEM AND CRITERIA USED IN THE ANALYSIS

The schemes are analysed on their performance on a range of criteria grouped into five sets as follows:

- Environment (referring to the animals' environment)
- Husbandry

- Stockmanship, handling, transport & slaughter
- Genetics & breeding
- Auditing.

The selected criteria were largely based on the input standards considered necessary to meet the 'Five Freedoms' and incorporate specific key welfare issues identified for each species from the scientific literature. The practicalities of meeting the criteria and prevailing methods of standard setting and auditing of the major assurance schemes were taken into account. This was necessary in order to avoid having a large number of idealised criteria that it would not be feasible to achieve in practice in current farming systems and/or that cover aspects that are not currently addressed by any of the existing assurance schemes.

The importance of measuring welfare outcomes is increasingly being recognised and ultimately schemes should be aiming towards the development of an auditing system which fully integrates inputs and outcomes. However, the development of systems of monitoring welfare outcomes is in its infancy and it was considered that including a large number of outcome-based criteria at this stage would not be helpful in scoring the performance of the schemes relative to each other. For this reason, only two outcome-based criteria are included in the current analysis: adequate monitoring of health and welfare by producers and monitoring of welfare outcomes by the assurance scheme. Credit is given for work towards developing and piloting the use of outcome measures. In any future analysis it is expected that a much wider range of outcome-based criteria would be incorporated into the scoring.

The generic criteria used in the analysis are shown in **Table 2.1**. Some of the generic criteria are not relevant for every species. In some cases there may be several individual criteria specific to a species that fall within a single generic criterion. Hence, for each species there may be none, one or more specific criteria scored under each generic criterion. The full lists of all criteria used for each species are given in **Section 3** and in the relevant appendices.

Each criterion is scored on a scale from zero to five, based on the written standards and accompanying documents published by the

schemes; additional explanatory information provided to the author was also taken into account for criteria relating to auditing and monitoring. Score five indicates the scheme standards meet the welfare ideal for that criterion, score zero indicates the scheme standards do not satisfy the criterion at all, whilst scores one to four indicate the scheme standards partially satisfy the criterion to increasing degrees. The "welfare ideal" in this context is considered to be the highest standard that could realistically be achieved within the confines of viable commercial practice. So for example, the true welfare ideal for dairy cows and calves would be for each calf to remain with its dam until weaned naturally. However, this is unlikely to be considered commercially feasible, so in this case the top score could be achieved by requiring that dairy calves are reared with a nurse cow. In the case of salmon, it may be argued that even schemes achieving the top score for space allowance are essentially still confinement systems, since the farming of salmon is dependent on restricting the fish to a relatively small enclosure.

Within each of the five sets, some criteria are considered to be particularly crucial to ensure high welfare standards. The scores for these 'key criteria' are therefore doubled.

The number of criteria within each set may vary. The total score for each set is therefore converted to a score out of 20 (via equivalent percentage calculation) so that the five sets are equally weighted in terms of importance in contributing to the welfare of the animals kept under the scheme. The scores for each set are added together to give a total score out of 100 for each scheme.

The welfare of breeding boars, bulls and rams and the welfare of breeding poultry are scored separately, based on relevant key criteria for the species plus any additional criteria of particular relevance for breeding animals. The score for breeding animals is then converted to a score for a single criterion (via equivalent percentage calculation) and incorporated into the overall scoring for the species.

Where schemes offer significant welfare advantages compared with normal industry practice, this is recognised by rating the schemes as follows:

Bronze

Score of 50% or higher. Offers an acceptable standard of welfare, with a number of welfare benefits compared with standard industry practice but with many important issues still unresolved.

Silver

Score of 70% or higher. Offers a good standard of welfare, with many welfare benefits compared with standard industry practice, but leaves certain important issues unresolved.

Gold

Score of 90% or higher. Offers a high standard of welfare.

The schemes are rated twice: Firstly on the environment criteria only, to give a rating for the farming system. So a score of 10 or higher out of 20 for the environment is needed to achieve a bronze system rating, 14 or higher to achieve a silver system rating, and 18 or higher to achieve a gold system rating. This rating is a measure of the welfare potential of the environment provided for the animals.

Secondly, a rating is given for the scheme as a whole. This is a measure of performance across all areas of the standards. In order to achieve a particular rating for the scheme overall, the same rating or higher must be awarded for the farming system. So, for example, in order for a scheme to achieve a silver rating overall, it must achieve at least 70% (14 out of 20) on the environment criteria to give a silver rating for the farming system, as well as achieving at least 70% (70 out of 100) overall. This double rating recognises the importance of the environment provided for the animals in determining the welfare potential of the scheme.

These ratings are intended to give an indication of where the scheme standards provide a higher level of welfare than that provided by standard industry practice for the species. The level of welfare provided by standard industry practice will not be the same for all species. There are also differences in the type, number and severity of welfare issues affecting each species and in the level of welfare that can be achieved in

commercially viable systems. The scores and ratings are therefore not necessarily directly comparable across species, especially where there are large differences in farming systems and practices. So for example, a silver rating for farmed salmon would indicate that the scheme provides a good standard of welfare within the context of what is commercially and practically feasible, with many welfare benefits compared with standard industry practice for the species. However, it would not necessarily indicate that the level of welfare provided would be higher than that for pigs, ruminants or poultry in a bronze-rated scheme.

Table 2.1: Generic criteria used in the analysis of assurance scheme standards

ENVIRONMENT	This set of criteria covers features of the housing system and the provision of space, light and physical resources necessary to provide high welfare potential.
No close confinement	Confinement systems have low welfare potential because they severely restrict animals' movement and behaviour. Examples include sow stalls and farrowing crates for breeding pigs, tethering of cattle and sheep, and battery cages for laying hens.
Adequate space allowance when housed	Adequate space is a fundamental requirement of any farming system to enable animals to perform a wide range of important natural behaviours and to reduce the risk of problems with aggression and harmful social behaviours such as tail-biting in pigs, feather-pecking in poultry and cannibalism.
Appropriate housing design	This includes features of the housing environment not covered elsewhere such as flooring type for pigs, cattle and sheep, provision of wallows and/or showers for pigs, and environmental conditions for poultry and salmon (e.g. temperature, humidity, air or water quality).
Provision of appropriate bedding/ litter/enrichment material	Appropriate bedding for mammals, litter material for poultry and additional enrichment for pigs and poultry are important for comfort and to provide opportunities for foraging, rooting (pigs), dustbathing (poultry) and exploratory behaviours. Environmental enrichment is also likely to be beneficial for salmon by providing opportunities for hiding and escape from aggressive interactions.
Provision of appropriate nesting facilities	Nesting behaviour is highly motivated in many species and provision of appropriate nesting facilities is essential for good welfare of breeding sows, laying hens and breeding poultry.
Appropriate lighting	This includes light intensity, light/dark periods and, for poultry, the provision of a twilight period to allow birds to settle and minimise the risk of injuries.
Free-range access	Free-range systems have high welfare potential because they provide a complex and interesting environment with ample opportunities for exercise and expression of a wide repertoire of natural behaviour.
Adequate outdoor space	It is important that stocking densities in outside areas are low enough to keep the ground in good condition, to provide adequate foraging resources, and to protect animal health by limiting the build-up of parasites.
Appropriate shelter/shade and protection from predators	Appropriate shelter and shade are essential to protect animals kept outdoors from rain, wind, sun and extremes of temperature. Overhead cover is important to encourage poultry to make full use of the range area.
Appropriate social grouping	Farmed animals may be kept in very large groups. This can cause problems for the recognition of individuals, which is often important for the social functioning of the group. Management practices often involve grouping animals according to size or production status, which may entail repeated regrouping, leading to social instability and aggression. In some cases, animals may be kept in social isolation, particularly breeding males, and this can also be a major welfare problem.
HUSBANDRY	This set of criteria covers how the animals are managed on farm, including mutilations and other invasive procedures, feeding and weaning practices and monitoring of health and welfare by producers.
No mutilations	Mutilations are operations that involve interference with the bone structure or sensitive tissues and are often carried out to make animals easier to manage or in an attempt to prevent welfare problems caused by harmful social behaviour associated with an inadequate environment. Most are carried out without any anaesthesia or analgesia. Examples include tail docking, teeth clipping and nose ringing of pigs, disbudding/dehorning and castration of cattle, tail docking and castration of sheep, and beak trimming of poultry.

Table 2.1: continued

No use of genetic engineering/cloning or invasive reproductive technologies associated with health or welfare problems	The use of cloning and genetic engineering in farm animal breeding presents severe welfare challenges as a direct result of the technologies and also through exacerbation of the problems caused by selective breeding for excessively fast growth rates and unsustainably high yields. Welfare problems can also arise from the use of invasive reproductive technologies such as embryo transfer.
Appropriate feeding	This includes the provision of adequate fibre for pigs, cattle, sheep and laying hens, sufficient iron and fibre for calves, and the duration of feed withdrawal prior to slaughter, which may be particularly severe for salmon and fast-growing meat poultry.
Appropriate weaning age	This criterion applies to mammals and refers to the age at which milk provision is stopped. For piglets, beef calves and lambs reared for meat this usually coincides with the cessation of maternal care, whereas dairy calves and dairy lambs will typically be removed from their dam very early and reared separately on milk or milk replacer. If milk provision is stopped before young animals are fully able to digest solid food this can result in significant health and welfare problems. Provision of adequate maternal care is also considered to be important for good welfare. However, this is not included in the analysis because it is usually considered impractical for dairy animals in current farming systems.
Adequate monitoring of health and welfare by producers	This criterion refers to on-farm monitoring of health and welfare by producers. Continual monitoring of health and welfare is essential to ensure that any problems are quickly identified and addressed. The setting of farm-specific targets for key welfare indicators is useful in encouraging continuous improvement. However, it is preferable for stringent targets to be set by the scheme so that all scheme members must achieve an acceptable level of welfare. Such targets could facilitate a move away from the use of breeds and systems that are incompatible with good welfare.
STOCKMANSHIP, HANDLING, TRANSPORT & SLAUGHTER	This set of criteria covers how the animals are cared for and handled on farm and during transport, marketing and slaughter.
Appropriate handling	This includes prohibition of the use of electric goads for mammals, humane catching methods for poultry, and handling and grading methods for salmon.
Promotion of high quality stockmanship	High quality stockmanship is essential for good welfare in all systems. Schemes should ensure that stockpeople are well-trained and competent.
Frequent checks for signs of illness, injury or distress	Frequent checks are essential to ensure any animal suffering from illness, injury or distress is rapidly identified so that appropriate treatment or assistance can be provided to minimise suffering.
Short transport duration	Transport is a very stressful procedure and the negative impacts on welfare generally increase with increasing journey duration. Ideally, animals should be slaughtered on the farm where they are reared or at the nearest abattoir. Current legislation allows repeated cycles of travel and rest periods with no overall limit on the total length of journeys. Schemes should set a limit on overall journey length, ideally no more than four hours and certainly no more than eight hours.
No live export	The export of live animals often involves very long journeys and great suffering, only for animals to be slaughtered when they reach their destination. Animals should instead be slaughtered as close as possible to where they are reared, with the meat exported to wherever it is required. Young calves may also be exported to be reared for veal, often in conditions that would be illegal in the UK.
No use of livestock markets	The sale of animals through livestock markets is very stressful, involving repeated loading, transport and unloading. Animals are often exposed to stressful handling procedures, grouping with unfamiliar animals and high noise levels.
Humane slaughter	This includes the prohibition of inhumane slaughter methods and specifications and monitoring to ensure effective stunning and unconsciousness until death.
Promotion of high welfare standards in the handling of animals during transport and slaughter	Training of staff involved in the handling of animals during transport, lairage, stunning and slaughter is essential to achieve acceptable standards of welfare. Slaughterhouses should have a written policy on animal welfare and designated staff responsible for ensuring high welfare standards. The installation of CCTV to monitor all stages of pre-slaughter handling, stunning and slaughter can play an important role in ensuring welfare policies are properly implemented in practice.

Table 2.1: continued

GENETICS & BREEDING	This set of criteria covers the breeding of the animals, including the types of breed permitted by the scheme and the welfare standards for breeding animals.
No use of breeds associated with increased incidence of health/welfare problems	Selective breeding for fast growth and excessively high yields has led to a number of very serious welfare issues for many species, including lameness and cardiovascular problems in pigs, beef cattle and meat poultry, reduced longevity and increased levels of infertility, lameness, mastitis, and metabolic diseases in dairy cows, and high susceptibility to bone fractures in laying hens. For some breeds, these welfare problems may be so severe that the animals are unable to have a life worth living.
High welfare standards for breeding animals	This covers the welfare of breeding boars, bulls and rams and breeding flocks of poultry. The welfare of these animals is scored separately, based largely on the key criteria for the species as a whole plus any additional criteria of particular relevance for breeding animals. This score is then incorporated into the overall scoring for the species.
No killing of surplus male animals	Selection for excessively high yields of milk and eggs has led to the males of some species being considered as waste by-products of milk and egg production. Male calves and lambs of dairy breeds may be considered unsuitable for rearing for meat and may be killed at birth. Male chicks of egg-laying breeds of poultry are routinely killed shortly after hatching. This issue could be eliminated by the use of dual-purpose breeds. Where specialised breeds are used, schemes should aim to ensure that male dairy calves and dairy lambs are reared for meat. Whilst they may not have the rapid weight gain and heavy carcasses valued by many producers, such animals can have certain advantages, such as producing lean meat for health-conscious consumers.
AUDITING	This set of criteria covers how the schemes ensure compliance with the standards and monitoring to ensure the standards are achieving an acceptable level of welfare.
Frequent inspections	Frequent inspections are essential to check compliance with the scheme standards.
Spot-checks	Spot-checks, particularly unannounced spot-checks, are important to check that the scheme standards are being complied with at all times and not just when producers are expecting an inspection. Ideally, spot-checks should be targeted at those producers who, for any reason, are considered more likely to have non-compliances, whilst some random spot-checks can also be useful so that all producers know they may receive an inspection at any time.
Monitoring of welfare outcomes by assurance scheme	This criterion refers to monitoring of welfare outcomes by the assurance scheme, which is essential to ensure that the scheme standards are achieving an acceptable level of welfare in practice.
Measures to address non-compliance	Stringent measures to address non-compliance are essential for the scheme standards to have real meaning. Any serious non-compliance should result in suspension of certification until the problem is rectified and withdrawal of certification if necessary. Minor non-compliances should be addressed within a specified time period. Multiple or repeated minor non-compliances should be treated as a serious non-compliance.

3. RESULTS

Certain criteria are considered crucial for the welfare of all species and are classified as key criteria in the analysis of standards for all species. These include:

- On-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Restrictions on transport duration (and prohibition of live export);
- Specifications and monitoring of the stunning and slaughter process to ensure effective stunning and unconsciousness until death;
- A system of monitoring welfare outcomes by the assurance scheme.

Summaries of the main welfare issues affecting each species and the selection of species-specific key criteria are presented in the following sections, together with the results of the analysis for each species and key areas for improvement of each scheme. Recommendations for improvement often include the prohibition of particular practices that are associated with health or welfare problems, including pain. It is recognised that in practice many such improvements cannot be achieved overnight and that, in some cases, worse welfare problems may ensue if certain practices were ended without taking appropriate steps to improve other aspects of the animals' environment and/or husbandry. In reality therefore, many of these practices would need to be phased out over a period of time. Major improvements in animal welfare can be achieved through well-planned programmes to phase out undesirable practices. For example, the beak trimming of laying hens has been largely phased out in Austria whilst simultaneously reducing levels of injurious pecking through improvements in environment and management (Compassion in World Farming, 2010). Key to successes such as this is careful planning, incorporating realistic time limits, appropriate incentives and technical support for farmers. Assurance schemes can play a crucial role in facilitating such improvements.

3.1 PIGS

3.1.1 Summary of major welfare issues & selection of key criteria for pigs

There are close to half a million breeding pigs in the UK and around nine million pigs are slaughtered each year. In many countries, pregnant sows are confined in individual stalls, which are so narrow that they are unable to turn around. It is well established that keeping sows in individual stalls causes suffering (SVC, 1997; AHAW, 2007a & b). Sow stalls have been prohibited by legislation in the UK since 1999 and are therefore not permitted by any of the assurance schemes in the analysis. Although all of the schemes are obligated to prohibit sow stalls, it was considered important to include this as a key criterion in the analysis in order to recognise that the absence of sow stalls represents a significant welfare improvement compared with pig production systems in many other countries and to give full credit to the schemes for this. Sows stalls will be prohibited across the EU from 1st January 2013, although the ban will exclude the period from weaning to four weeks after service.

Although sow stalls are prohibited in the UK, many sows are still confined for several weeks during farrowing and nursing. Sows in farrowing crates are unable to turn around or to interact normally with, or move away from, their piglets. The EU Scientific Panel on Animal Health and Welfare (AHAW) states: *"Housing of sows in farrowing crates severely restricts their freedom of movement which increases the risk of frustration. It does not allow them, for instance, to select a nest site, to show normal nest-building behaviour, to leave the nest site for eliminative behaviour or to select pen areas with a cool floor for thermoregulation"* (AHAW, 2007b).

Sows are highly motivated to perform nest-building behaviour prior to farrowing and the availability of adequate nesting material is essential to the behaviour (Arey *et al*, 1991). EU law (Commission Directive 2001/93/EC) states: *"In the week before the expected farrowing time sows and gilts must be given suitable nesting material in sufficient quantity unless it is not technically feasible for the slurry system used in the establishment."* As farrowing

crates are partly- or fully-slatted, bedding is not commonly provided in crates. Prohibition of farrowing crates and provision of nesting material for farrowing sows are both classified as key criteria in the analysis.

Provision of proper environmental enrichment is essential for good welfare of pigs and is a key criterion in the analysis. In the absence of appropriate substrate to explore, pigs redirect their exploratory behaviour towards pen structures and other pigs, which can lead to damaging behaviours like ear and tail biting. These abnormal and damaging behaviours, which can lead to pain and injury, are a sign that the needs of pigs to show certain behaviours are not met (AHAW, 2007c). Since 2003, EU legislation (Directive 2001/93/EC) requires that *“pigs must have permanent access to a sufficient quantity of material to enable proper investigation and manipulation activities, such as straw, hay, wood, sawdust, mushroom compost, peat or a mixture of such”*. However, this requirement is often ignored or inappropriate materials such as chains, ropes and rubber or plastic ‘toys’ are provided instead, which are not able to meet the behavioural needs of pigs.

Provision of bedding for comfort and thermoregulation is also important. A thick layer of material such as straw may act as both enrichment material and bedding, provided fresh material is added regularly to maintain the pigs’ interest. Alternatively, additional material such as earth or compost may be provided for rooting and foraging in addition to straw or other material provided for bedding. The use of solid flooring is important to allow the provision of adequate quantities of appropriate natural materials for enrichment. The AHAW Panel states: *“only lower quality enrichment materials are provided [in fully-slatted systems] like hanging toys, indicating a risk for pig welfare as the need for exploration will not be met in these systems. Solid floors facilitate provision of adequate enrichment materials”* (AHAW, 2007c).

Currently permitted legal minimum space allowances for pigs reared for slaughter in the UK are much too low. Inadequate space contributes to stress and increased levels of aggression and harmful social behaviours. The AHAW Panel states: *“For pigs up to 110kg, aggression, skin lesions, tail-biting and responses to adrenal challenge tests, all*

increased with decreasing space allowance” (AHAW, 2005). Adequate space allowance is a key criterion in the analysis.

Ideally, pigs should have access to pasture or woodland to ensure that they have ample opportunities for exercise, foraging, rooting and exploration. Free range access is considered as a key criterion in the analysis. The provision of wallows and/or showers to give pigs the opportunity to wet their skin is important to allow pigs to thermoregulate adequately at higher temperatures, especially for heavier pigs (AHAW, 2007c). Coating the skin with mud also acts as an effective sun-block for outdoor pigs.

Growing pigs are often repeatedly re-grouped according to size and breeding sows may be mixed into new groups each time they are returned to group housing after farrowing. This results in aggression until a stable hierarchy is formed and in some cases serious injuries may occur. It is important to keep pigs in stable groups to minimise aggression. Ideally, pigs reared for meat should be reared in litter groups and sows should be kept in long-term stable groups, either returning to the same group after each farrowing or remaining in groups during the farrowing and suckling period with each sow having her own farrowing accommodation. It is also important to avoid mixing pigs from different social groups for transport, as this results in fighting, which is exhausting and very stressful (Bradshaw *et al*, 1996) and can lead to injuries (Warriss, 1998).

Many producers routinely subject piglets to a number of mutilations, usually without any anaesthesia or analgesia. These include tail docking and teeth clipping or grinding, which are performed in an attempt to reduce injuries caused by tail biting, fighting and competition for teats. Both tail docking and tooth clipping or grinding cause acute pain (Noonan *et al*, 1994; Sutherland *et al*, 2008; Hay *et al*, 2004) and may also lead to long-term pain (AHAW, 2007d; Hay *et al*, 2004). Prohibition of tail docking and teeth clipping are both classified as key criteria in the analysis.

These mutilations can be avoided by providing pigs with an appropriate environment, including adequate space and proper enrichment, and by limiting litter size to that

which can be fully sustained by the sow. Since 2003, routine tail docking and teeth clipping or grinding are prohibited in the EU. Commission Directive 2001/93/EC states: *“Neither tail docking nor reduction of corner teeth must be carried out routinely but only where there is evidence that injuries to sows’ teats or to other pigs’ ears or tails have occurred. Before carrying out these procedures, other measures shall be taken to prevent tail biting and other vices taking into account environment and stocking densities. For this reason inadequate environmental conditions or management systems must be changed.”*

In many countries, male pigs are also routinely castrated, usually without anaesthesia or analgesia. Castration of pigs is not common in the UK but it is nonetheless included as a key criterion in the analysis to give full credit to the schemes for prohibiting the use of this painful procedure.

Nose-ringing of pigs kept outdoors may be carried out in an attempt to reduce damage to the ground. This mutilation partially negates the benefits of free-range systems by curtailing the pigs’ ability to engage in rooting. Excessive damage to pasture should instead be prevented by using low stocking densities and careful management including rotation and resting periods to allow recovery of vegetation.

The provision of adequate high-fibre feed is essential to minimise hunger and gastric ulcers in pigs, especially for breeding sows, who are often fed a restricted diet to prevent excessive weight gain. Restrictive feeding and lack of roughage and appropriate enrichment can lead to increased restlessness, stereotypies and aggression, a high prevalence of stomach ulcers and frustration in sows (AHAW, 2007a). EU law (Directive 2001/88/EC) states: *“To satisfy their hunger and given the need to chew, all dry pregnant sows and gilts must be given a sufficient quantity of bulky or high-fibre food as well as high-energy food”*. In order to fully address hunger, sows should have permanent access to roughage. Provision of adequate fibre is classified as a key criterion in the analysis.

Under natural conditions, piglets are gradually weaned by around 14 to 17 weeks of age (Jensen, 1986). Early weaning of piglets is stressful and is associated with increased levels

of belly-nosing, a more significant growth check and a higher incidence of health problems including diarrhoea, compared with later weaning (AHAW, 2007a). Intake of solid feed in piglets before four weeks of age is minimal (Pajor *et al*, 1991) and weaning before four weeks is associated with significant health and welfare problems. The AHAW Panel states: *“Weaning before 4 weeks causes diarrhoea and weight gain retardation”* (AHAW, 2007a). Piglets should therefore not be weaned until they are at least four weeks old and there are additional health and welfare benefits associated with weaning later than four weeks (Andersen *et al*, 2000). EU legislation stipulates that piglets must not be weaned earlier than 28 days of age unless an “all-in all-out” management system is used (where piglets are moved in batches to separate accommodation that is cleaned between each batch to minimise the risk of infections) in which case they may be weaned as early as 21 days. Weaning age is a key criterion in the analysis.

The use of humane slaughter methods is classified as a key criterion for pigs. The use of well-designed gas stun/kill systems with wide races has the advantage of reducing pre-slaughter handling and allowing pigs to be moved and stunned in groups, which can potentially improve welfare significantly. However, gas systems for pigs typically use high concentrations of carbon dioxide, which is highly aversive. The AHAW Panel states: *“[A]t concentrations above 30% CO₂ the gas is known to be aversive and cause hyperventilation and irritation of the mucous membranes that can be painful, and elicits hyperventilation and gasping before loss of consciousness”* (AHAW, 2004a). The Panel concludes: *“The gas used to induce unconsciousness should be non-aversive. In this regard, the use of argon, nitrogen or mixtures of these gases seems to have animal welfare advantages, because hypoxia induced with these gas mixtures is not aversive to pigs”* (*Ibid.*). There is an urgent need for the development and adoption of gas stun/kill systems for pigs that use non-aversive gas mixtures, as have been developed for poultry.

Pigs have been selectively bred for fast growth, efficient feed conversion and high levels of lean meat in the carcass. This has led to serious health problems, including leg disorders and

cardiovascular problems. The incidence of leg weakness, particularly osteochondrosis, is genetically correlated with both growth rate and leanness (Rauw *et al*, 1998; AHAW, 2007c). Modern pigs have a reduced ability to exercise and to cope with stressful situations without having cardiovascular problems (AHAW, 2007c). The AHAW Panel states: *“The genetic selection of pigs for rapid growth and lean meat without enough consideration of other factors has led to some widespread and serious problems, in particular leg disorders, cardiovascular malfunction when high levels of activity are needed or stressful conditions are encountered, and inadequate maternal behaviour”* (AHAW, 2007e). Prohibition of breeds associated with these problems is a key criterion in the analysis.

3.1.2 Analysis of results for pigs

The criteria and key criteria (highlighted with an asterisk) used in the analysis of assurance scheme standards for pigs and the scores achieved by each of the schemes are shown in **Table 3.1**. The full results tables and scoring categories for pigs are given in **Appendix 1**.

Table 3.1: Scoring of assurance scheme standards for pigs

Key criteria are highlighted with an asterisk. Criteria are grouped into five sets. Totals for each set of criteria are converted to scores out of 20, which are totalled to give an overall score out of 100 for each scheme. Scores of ≥ 50 , ≥ 70 and ≥ 90 are classified as bronze, silver and gold systems respectively.

CRITERIA	ABP	QMS	RSPCA	SOPA	SA	Score from
Prohibition of sow stalls*	10	10	10	10	10	/10
Prohibition of farrowing crates*	0	0	4	10	10	/10
Space allowance when housed	2	2	4	8	10	/10
Flooring	0	0	4	4	4	/5
Provision of wallows/showers	0	1	0	0	0	/5
Provision of natural enrichment material/bedding*	0	0	10	10	10	/10
Provision of nesting material for farrowing sows*	0	0	10	10	10	/10
Lighting	2	2	3	5	5	/5
Free range access*	0	0	0	8	8	/10
Outdoor stocking density	1	2	1	5	5	/5
Provision of shelter & shade	3	5	5	5	5	/5
Social grouping	1	1	3	4	4	/5
Total for environment criteria	19	23	54	79	81	/90
Score for environment	4	5	12	18	18	/20
Farming system classification	-	-	Bronze	Gold	Gold	
Prohibition of tail docking*	0	0	2	10	10	/10
Prohibition of teeth reduction*	0	0	2	10	10	/10
Prohibition of castration*	10	10	10	10	10	/10
Prohibition of nose ringing	0	0	1	5	5	/5
Prohibition of GM/cloned animals & offspring	0	0	0	4	4	/5
Provision of adequate fibre*	2	2	6	10	10	/10
Weaning age*	0	0	0	8	8	/10
Monitoring of health and welfare by producers*	6	4	8	2	2	/10
Total for husbandry criteria	18	16	29	59	59	/70
Score for husbandry	5	5	8	17	17	/20
Prohibition of electric goads	1	0	5	5	5	/5
Training of stockpeople	2	3	3	2	2	/5
Frequency of checks	3	3	5	5	5	/5
Transport duration*	0	0	8	8	8	/10
Prohibition of live export*	0	0	8	8	10	/10
Prohibition of use of livestock markets	0	0	5	5	5	/5
Humane slaughter methods*	0	0	0	0	6	/10
Specifications & monitoring of slaughter*	8	2	10	4	8	/10
Promotion of high welfare standards during transport & slaughter	4	2	4	2	3	/5
Total for stockmanship, handling, transport & slaughter criteria	18	10	48	39	52	/65
Score for stockmanship, handling, transport & slaughter	6	3	15	12	16	/20
Breeds permitted*	2	2	2	8	8	/10
Welfare of breeding boars	1	0	2	4	4	/5
Total for genetics & breeding criteria	3	2	4	12	12	/15
Score for genetics & breeding	4	3	5	16	16	/20
Frequency of inspections by certifying body	4	3	4	4	4	/5
Spot-checks	1	2	5	1	3	/5
Monitoring of welfare outcomes by the scheme*	2	4	8	0	6	/10
Measures to address non-compliance	5	5	5	5	5	/5
Total for auditing criteria	12	14	22	10	18	/25
Score for auditing	10	11	18	8	14	/20
OVERALL WELFARE SCORE	29	27	58	71	81	/100
Overall scheme classification	-	-	Bronze	Silver	Silver	

Overall, the **SA** scheme achieves the highest score, with 81 points out of a possible 100, giving a silver scheme classification. **SOPA** achieves the next-highest score, with 71 points, also giving a silver scheme classification. Compared with standard industry practice, these schemes offer many **welfare advantages**, including:

- Prohibition of farrowing crates;
- Significantly higher space allowances;
- Prohibition of fully-slatted floors;
- Provision of proper enrichment materials for all pigs and nesting material for farrowing sows;
- Free-range access;
- Provision of adequate shelter and shade;
- Prohibition of mutilations;
- Prohibition of genetic engineering and cloning;
- Prohibition of the use of electric goads;
- A restriction on transport duration to eight hours;
- Prohibition of the sale of pigs through livestock markets;
- A requirement to use breeds that do not suffer from an increased incidence of health problems associated with intensive production.

Additionally, for the **SA** scheme:

- Prohibition of the use of carbon dioxide stun/kill systems unless welfare is improved overall through better handling;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- A system of monitoring welfare outcomes by the assurance scheme.

However, there is still room for improvement. Both the SA and SOPA schemes achieve a gold classification for the farming system but the schemes overall are let down by a number of features that could be rectified to achieve a gold classification for the scheme as a whole.

Key areas for improvement include:

- Removal of the exception from the requirement for free range access that currently applies to one fifth of the life of pigs reared for meat;
- Provision of wallows and/or showers for all pigs;
- Strengthening of the prohibition of genetically engineered and cloned pigs to also prohibit the use of their offspring;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by

producers, including targets for key welfare indicators;

- Strengthening of the requirements for training of stockpeople;
- Work towards the development of gas stun/kill systems using non-aversive gas mixtures and the prohibition of stun/kill systems using high concentrations of carbon dioxide;
- Strengthening of the requirements on breed: This could be achieved by completely prohibiting the use of breeds bred for excessively fast growth and leanness or excessively large litter sizes; the introduction of fixed targets for all scheme members for key parameters such as longevity, piglet survival, levels of lameness and porcine stress syndrome; a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

Additionally, for **SOPA**:

- Development of a system of monitoring welfare outcomes by the assurance scheme.

The **RSPCA** scheme achieves a total of 58 points and a bronze scheme classification, which is in line with its bronze farming system classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Restrictions on the use of farrowing crates;
- Greater space allowances;
- Prohibition of fully-slatted floors;
- Provision of proper enrichment materials for all pigs and nesting material for farrowing sows;
- Restrictions on the use of mutilations;
- A requirement for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Prohibition of the use of electric goads;
- A requirement for training of stockpeople;
- A restriction on transport duration to eight hours;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- A system of monitoring welfare outcomes by the assurance scheme.

Key areas for improvement of the **RSPCA** scheme include:

- Complete prohibition of farrowing crates (this

- will be introduced by the end of 2013);
- Complete prohibition of mutilations;
- Provision of wallows and/or showers for all pigs;
- Prohibition of the use of genetically engineered or cloned pigs and their offspring;
- Later weaning age (at least four weeks and preferably more);
- Work towards the development of gas stun/kill systems using non-aversive gas mixtures and the prohibition of stun/kill systems using high concentrations of carbon dioxide;
- Strengthening of the requirements on breed: This could be achieved by the introduction of fixed targets for all scheme members for key parameters such as longevity, piglet survival and levels of lameness and porcine stress syndrome, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

The **ABP** and **QMS** schemes score 29 and 27 points respectively. These schemes offer few welfare benefits compared with standard industry practice in the UK, although the prohibition of sow stalls and castration does confer significant welfare advantages compared with welfare standards for pigs in many other countries. Other **good features** of the **ABP** scheme include:

- A requirement for on-farm monitoring of health and welfare by producers;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death.

Good features of the **QMS** scheme include:

- A requirement to adhere to government welfare codes;
- A requirement for all farms to provide training for stockpeople;
- Work is currently underway to develop a system of monitoring welfare outcomes by the assurance scheme.

However, there are some **major issues for improvement**, where these schemes arguably do not interpret the legislation adequately. For example, these schemes allow inappropriate non-natural objects, such as footballs or plastic pipes, to be used as the only enrichment material, rather than complex natural materials such as those listed in EU Directive 2001/93/EC.

In addition, tail docking and teeth clipping are permitted by both schemes despite the fact that EU legislation requires that these mutilations are not performed routinely and that steps must be taken to improve the environment before resorting to tail docking and teeth clipping. If producers under these schemes are tail docking and teeth clipping without providing appropriate natural enrichment materials, this would appear to be in breach of the requirements of Directive 2001/93/EC. Other **key areas for improvement** of the **ABP** and **QMS** schemes include:

- Prohibition of farrowing crates and provision of nesting material for all farrowing sows;
- Greater space allowances;
- Prohibition of fully-slatted floors to facilitate the provision of appropriate enrichment;
- Later weaning age (at least four weeks);
- Introducing a restriction on transport duration (to eight hours or less);
- Work towards the development of gas stun/kill systems using non-aversive gas mixtures and the prohibition of stun/kill systems using high concentrations of carbon dioxide;
- Introduction of requirements aimed at avoiding breed-related health and welfare problems: This could be achieved by the introduction of fixed targets for all scheme members for key parameters such as longevity, piglet survival and levels of lameness and porcine stress syndrome, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

Additionally, in the case of **ABP**:

- Development of a system of monitoring welfare outcomes by the assurance scheme.

SUMMARY OF THE RESULTS FOR PIG SCHEMES:

1st	Soil Association (SA) 81 points (Gold farming system; Silver scheme)
2nd	Scottish Organic Producers Association (SOPA) 71 points (Gold farming system; Silver scheme)
3rd	RSPCA Freedom Food (RSPCA) 58 points (Bronze farming system; Bronze scheme)
4th	Assured British Pigs – Red Tractor (ABP) 29 points
5th	Quality Meat Scotland (QMS) 27 points

3.2 DAIRY CATTLE

3.2.1 Summary of major welfare issues & selection of key criteria for dairy cattle

There are a little under two million dairy cows producing milk in the UK. Dairy cows are typically housed in cubicles or straw yards, or in some cases may be kept tethered in tie stalls. The majority of dairy cows in the UK have some access to pasture during the grazing season, although the proportion of cows kept in zero-grazing systems is increasing and may be as high as 10% (SAC Chief Dairy Advisor, personal communication, November 2008).

Prohibition of tethering, adequate space allowance, provision of adequate bedding and free range access are all classified as key criteria in the analysis. Selection for increased milk yield has led to an increase in cow size and many cubicles are not large enough for the size of the cow (AHAW, 2009a). Where cows are housed in cubicles, provision of an adequate loafing area is essential. The AHAW Panel states: *"A total space allowance of less than 8.6 m² in cubicle houses negatively affects welfare"* (AHAW, 2009b). Tie-stalls and cubicle housing systems restrict the movement and behaviour of dairy cows and pose a greater risk of injuries compared with straw yards and pasture-based systems. There are a large number of studies showing that cows kept on pasture are healthier (AHAW, 2009a).

Even with good management, housing in cubicles or tie stalls can be expected to have a negative impact on the welfare of the cows in terms of leg and foot disorders and other injuries, compared with straw yards and pasture. The AHAW Panel states: *"When dairy cattle are kept in cubicle houses, foot and leg disorders are substantially more frequent than they are in straw yards. Since leg and foot disorders are the major welfare problem for dairy cattle and leg and foot disorders are a problem even in well-managed cubicle houses, alternatives to cubicles, e.g. straw yards, are needed and in the short-term improvements to cubicle house design should be made"* (AHAW, 2009c).

Cow comfort and opportunities for behavioural expression are also improved in straw yards and at pasture compared with cubicles and tie stalls (Phillips and Schofield, 1994; Livshin *et al*, 2005; O'Connell *et al*, 1989). In free

choice experiments, dairy cows show a strong preference for a straw yard system over a cubicle housing system (Fregonesi and Leaver, 2002) and prefer to spend most of their time outdoors at pasture during the summer and several hours outside each day throughout the year on all except frosty days (Krohn *et al*, 1992). The level of aggressive interactions between dairy cows is much higher in cubicle housing compared with cows at pasture (Wierenga *et al*, 1984). The AHAW Panel states: *"In the risk assessment, the risk estimates for behavioural problems, fear and pain associated with the housing/environment conditions were highest for tie-stalls, relatively high for cubicle houses, much lower for straw yards and very low for pasture"* (AHAW, 2009d).

Dairy cows are often grouped according to production status and this can mean repeated re-grouping with unfamiliar animals. Cows should ideally be kept in small stable groups. The AHAW Panel states: *"Cattle in stable groups have complex, long-lasting affiliative relationships. Maintenance of stable groups ensures that these relationships can continue, reduces the overall stress level in cows and may improve milk production... Grouping and re-grouping of cows often causes increased aggression and can cause lameness, resulting in poor welfare and impaired production... In large herds the number of aggressive interactions per cow is reported to be greater"* (AHAW, 2009b). The Panel recommends: *"Husbandry practices should avoid regrouping of dairy cows as far as possible in order to facilitate continuation of long-lasting social bonds, avoid frequent disruption and provide social stability... There should be development and implementation of housing design enabling selective, yield-matched feeding within a herd (e.g. by selection doors) and thus avoiding regrouping"* (*Ibid.*).

The horn buds of dairy calves are routinely removed. Disbudding may be carried out with a hot iron and local anaesthetic or by chemical cauterisation during the first week of life without anaesthetic. Schemes should prohibit the latter method to ensure that anaesthetic is always used for disbudding. Ideally, a naturally polled (hornless) breed of cattle should be used or producers should breed for polling. However, producers are usually reluctant to do this because polled Holstein cattle tend to be associated with a lower milk yield (IRTA,

2009). Prohibition of disbudding (or at least a requirement to use anaesthetic) is classified as a key criterion in the analysis. Male calves may also be castrated. Prohibition of castration (or a requirement to use anaesthetic) is classified as a key criterion in the analysis of standards for beef cattle (see Section 3.3) but is classified as an ordinary criterion for dairy cattle, since the welfare of the female animals is the main focus of the analysis here.

Weaning age is classified as a key criterion in the analysis. Dairy calves are usually removed from their dam within a day or two of birth and reared separately on milk or milk replacer, often being weaned abruptly as young as five weeks of age. Natural weaning in cattle takes place at around eight to nine months of age (AHAW, 2006). At birth, the reticulum, rumen, and omasum of the calf are undeveloped, non-functional and small in size (*Ibid.*). Calves, being ruminant animals, require a physically and functionally developed rumen to consume forage and dry feeds (*Ibid.*). Calves normally commence eating solid food at two to three weeks, and they eat enough solid food for development of a functional rumen to start by about six weeks of age. However, the rumen remains underdeveloped during the first two to three months of age (*Ibid.*). Calves, should therefore not be weaned until at least eight weeks of age and preferably 12 weeks. Helopa *et al* (2007) investigated the effects of weaning at five or eight weeks. They found that consumption of dry feed by all calves was low at five weeks of age and consequently the calves abruptly weaned at five weeks lost weight after weaning. The authors conclude that abrupt weaning at the age of five weeks cannot be recommended.

Prohibition of excessively high-yielding breeds is a key criterion in the analysis. Selective breeding of dairy cattle has led to a dramatic increase in milk yield over recent decades. Milk production per cow has more than doubled in the past 40 years and this increase in yield has been accompanied by declining ability to reproduce, increasing incidence of health problems, and declining longevity in modern dairy cows (Oltenucu and Algers, 2005). The genetic component underlying milk yield has been found to be positively correlated with the incidence of lameness, mastitis (inflammation of the udder), reproductive disorders and metabolic disorders (AHAW, 2009b). High yielding dairy cows are generally in negative energy balance in early lactation and mobilise body reserves for milk production (Butler and Smith, 1989). Loss

of body condition score is greater and more prolonged for higher yielding cows (Gallo *et al*, 1996). Metabolic or production diseases are a manifestation of the cow's inability to cope with the metabolic demands of high production (Mulligan and Doherty, 2008).

There is a large body of evidence linking selection for increased milk yield with infertility (Webster, 2000). Higher milk yield is genetically correlated with longer calving interval, increased days to first service and reduced conception at first service (Pryce *et al*, 1997 & 1998). Infertility is the biggest cause of culling in dairy cows (Esslemont and Kossaibati, 1997; Whitaker *et al*, 2000). The incidence of lameness in dairy cows has increased greatly in recent decades. For example, a farmer-based national survey of lameness in the UK in 1957/58 found an annual incidence of 4% (Leech *et al*, 1960) and surveys since the 1990s have reported mean annual incidences ranging from above 20% to over 50% (Clarkson *et al*, 1996; Whitaker *et al*, 2000; Esslemont and Kossaibati, 2002). A number of studies since the 1990s report a mean annual incidence of mastitis ranging from above 30 to over 70 cases per 100 cows (Esslemont and Kossaibati, 1996; Kossaibati *et al*, 1998; Esslemont and Kossaibati, 2002; Bradley *et al*, 2007). The AHAW Panel states: "*Long term genetic selection for high milk yield is the major factor causing poor welfare, in particular health problems, in dairy cows*" (AHAW, 2009b).

Another consequence of breeding for specialised milk breeds is that the male calves are often not considered suitable for beef production. For this reason, they may be killed at birth or exported to mainland Europe to be reared for veal, often in systems that would be illegal under UK law. Some male dairy calves are reared for beef or veal in the UK. These calves are rarely reared on pasture as it is usually considered uneconomic because of their slower rate of weight gain compared with beef breeds. However, good quality indoor systems with adequate space and bedding offer a better alternative for such calves than live export or killing at birth.

3.2.2 Analysis of results for dairy cattle

The criteria and key criteria (highlighted with an asterisk) used in the analysis of assurance scheme standards for dairy cattle, and the scores achieved by each of the schemes, are shown in **Table 3.2**. The full results tables and scoring categories for dairy cattle are given in **Appendix 2**.

Table 3.2: Scoring of assurance scheme standards for dairy cattle

Key criteria are highlighted with an asterisk. Criteria are grouped into five sets. Totals for each set of criteria are converted to scores out of 20, which are totalled to give an overall score out of 100 for each scheme. Scores of ≥ 50 , ≥ 70 and ≥ 90 are classified as bronze, silver and gold systems respectively.

CRITERIA	ADF	RSPCA	SOPA	SA	Score from
Prohibition of tethering*	0	10	10	10	/10
Space allowance when housed*	4	4	8	8	/10
Flooring	2	4	4	4	/5
Provision of bedding*	8	10	10	10	/10
Lighting	1	4	5	3	/5
Free range access*	0	4	10	8	/10
Outdoor stocking density	0	1	5	5	/5
Provision of shelter & shade	3	5	5	5	/5
Social grouping	0	0	2	2	/5
Prohibition of individual housing of calves	2	2	4	4	/5
Total for environment criteria	20	44	63	59	/70
Score for environment	6	13	18	17	/20
Farming system classification	-	Bronze	Gold	Silver	
Prohibition of disbudding/dehorning*	0	6	2	2	/10
Prohibition of castration of male calves	0	0	1	1	/5
Prohibition of GM/cloned animals & offspring	0	5	4	4	/5
Prohibition of embryo transfer	0	2	5	5	/5
Provision of forage in diet*	0	6	10	10	/10
Provision of iron & fibre for calves	1	3	3	3	/5
Weaning age*	2	4	10	10	/10
Monitoring of health and welfare by producers*	4	8	2	2	/10
Total for husbandry criteria	7	34	37	37	/60
Score for husbandry	2	11	12	12	/20
Prohibition of electric goads	1	5	5	5	/5
Training of stockpeople	2	3	2	2	/5
Frequency of checks	5	4	3	3	/5
Transport duration*	0	8	8	8	/10
Prohibition of live exports*	0	8	6	10	/10
Prohibition of use of livestock markets	0	3	3	3	/5
Specifications & monitoring of slaughter*	4	10	6	8	/10
Promotion of high welfare standards during transport & slaughter	4	4	2	3	/5
Total for stockmanship, handling, transport & slaughter criteria	16	45	35	42	/55
Score for stockmanship, handling, transport & slaughter	6	16	13	15	/20
Breeds permitted*	2	2	6	6	/10
Welfare of breeding bulls	0	3	3	4	/5
Prohibition of killing of male calves	0	0	0	4	/5
Total for genetics & breeding criteria	2	5	9	14	/20
Score for genetics & breeding	2	5	9	14	/20
Frequency of inspections by certifying body	2	4	4	4	/5
Spot-checks	1	5	1	3	/5
Monitoring of welfare outcomes by the scheme*	0	8	0	10	/10
Measures to address non-compliance	5	5	5	5	/5
Total for auditing criteria	8	22	10	22	/25
Score for auditing	6	18	8	18	/20
OVERALL WELFARE SCORE	22	63	60	76	/100
Overall scheme classification	-	Bronze	Bronze	Silver	

Overall, the **SA** scheme achieves the highest score, with 76 points out of a possible 100, giving a silver scheme classification. Compared with standard industry practice, this scheme offers many **welfare advantages**, including:

- Prohibition of tethering;
- Significantly greater space allowances;
- Prohibition of fully-slatted floors;
- Provision of adequate bedding;
- Access to pasture throughout the grazing season;
- Provision of adequate shelter and shade;
- Prohibition of individual housing of calves after seven days of age and of selling calves into intensive systems;
- Prohibition of embryo transfer and the use of genetically engineered or cloned cattle;
- A requirement for at least 60% of the cows' diet to consist of fodder, roughage or silage;
- Later weaning of calves (although they will still be removed from their dam within a few days);
- Prohibition of electric goads;
- A restriction on transport duration to eight hours and prohibition of the live export of calves under one month old and of cows for slaughter;
- Restrictions on the use of livestock markets;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- A requirement to use breeds that do not suffer from an increased incidence of health problems associated with intensive production or problems at birth;
- A requirement for producers to implement a plan to phase out the killing of male dairy calves;
- A system of monitoring welfare outcomes by the assurance scheme.

However, there is still room for improvement. The **SA** scheme achieves a silver classification for the farming system but is only one point away from a gold system classification and a number of improvements in certain areas would allow this scheme to achieve a gold classification for both the farming system and the scheme as a whole. **Key areas for improvement** include:

- Prohibition of cubicle systems;
- Provision of an outdoor exercise area when housed;
- Introducing a requirement for cows to be kept in small stable groups;

- Introducing a requirement to use polled breeds or to breed for polling (unless horns are left intact) in order to avoid disbudding, or at least a requirement to use anaesthesia and analgesia for all methods of disbudding in line with Commission Regulation (EC) No 889/2008, which requires that "*adequate anaesthesia and/or analgesia*" must be applied;
- Prohibition of castration of male calves or introduction of a requirement to use anaesthesia and analgesia in line with the requirements of Commission Regulation (EC) No 889/2008;
- Strengthening of the prohibition of genetically engineered and cloned cattle to also prohibit the use of their offspring;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Complete prohibition of the use of livestock markets;
- Strengthening of the requirements on breed: This could be achieved by completely prohibiting the use of breeds bred for excessively high yields and/or a requirement to use dual-purpose breeds and/or the introduction of fixed targets for all scheme members for key parameters such as longevity, fertility, and levels of lameness, mastitis and metabolic diseases. There should be a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

The **RSPCA** scheme achieves a total of 63 points and a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of tethering;
- Greater space allowances in loose housing systems;
- Prohibition of fully-slatted floors;
- Provision of adequate bedding;
- Access to pasture for at least several hours a day during the grazing season;
- Provision of adequate shelter and shade;
- A requirement to use local anaesthesia for disbudding;
- Prohibition of the use of genetically engineered or cloned cattle and their offspring;

- Restrictions on the use of embryo transfer;
- Provision of fibre;
- A requirement for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Prohibition of electric goads;
- A requirement for training of stockpeople;
- A restriction on transport duration to eight hours and prohibition of the live export of calves;
- Restrictions on the use of livestock markets;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- A system of monitoring welfare outcomes by the assurance scheme.

The **RSPCA** scheme achieves a bronze farming system classification but is only one point away from a silver system classification and with improvements in certain areas this scheme could achieve a silver classification for both the farming system and the scheme as a whole. **Key areas for improvement** include:

- Prohibition of cubicle systems or at least a requirement for an increased loafing area;
- Strengthening of the requirements on access to pasture to ensure all cows have access to sufficient pasture to allow proper grazing throughout the grazing season;
- Introducing a requirement for cows to be kept in small stable groups;
- A reduction in the length of time calves may be housed individually;
- Prohibition of castration of male calves or introduction of a requirement to use anaesthesia and analgesia;
- Later weaning age (preferably at least eight weeks);
- Complete prohibition of the use of livestock markets;
- Introduction of requirements aimed at avoiding breed-related health and welfare problems: This could be achieved by the introduction of fixed targets for all scheme members for key parameters such as longevity, fertility and levels of lameness, mastitis and metabolic diseases, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management;
- Prohibition of the killing of male dairy calves.

SOPA scores 60 points, giving a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of tethering;
- Significantly greater space allowances;
- Prohibition of fully-slatted floors;
- Provision of adequate bedding;
- Access to pasture throughout the grazing season;
- Provision of adequate shelter and shade;
- A requirement for cows to be kept in reasonably stable groups;
- Prohibition of individual housing of calves after seven days of age;
- Prohibition of embryo transfer and the use of genetically engineered or cloned cattle;
- A requirement for at least 60% of the cows' diet to consist of fodder, roughage or silage;
- Later weaning of calves (although they will still be removed from their dam within a few days);
- Prohibition of electric goads;
- A restriction on transport duration to eight hours;
- Restrictions on the use of livestock markets;
- A requirement to use breeds that do not suffer from an increased incidence of health problems associated with intensive production or problems at birth.

The **SOPA** scheme achieves a gold classification for the farming system but the scheme is let down by a number of features that could be rectified to achieve a gold classification for the scheme as a whole. **Key areas for improvement** include:

- Prohibition of cubicle systems;
- Introducing a requirement for cows to be kept in stable groups with animals of a similar size;
- A requirement to use polled breeds or to breed for polling (unless horns are left intact) in order to avoid disbudding, or at least a requirement to use anaesthesia and analgesia for all methods of disbudding in line with Commission Regulation (EC) No 889/2008, which requires that "*adequate anaesthesia and/or analgesia*" must be applied;
- Prohibition of castration of male calves or introduction of a requirement to use anaesthesia and analgesia in line with the requirements of Commission Regulation (EC) No 889/2008;

- Strengthening of the prohibition of genetically engineered and cloned cattle to also prohibit the use of their offspring;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Prohibition of the live export of calves;
- Complete prohibition of the use of livestock markets;
- Strengthening of the requirements on breed: This could be achieved by completely prohibiting the use of breeds bred for excessively high yields and/or a requirement to use dual purpose breeds and/or the introduction of fixed targets for all scheme members for key parameters such as longevity, fertility and levels of lameness, mastitis and metabolic diseases, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management;
- Prohibition of the killing of male dairy calves;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

The **ADF** scheme scores 22 points. This scheme offers few welfare benefits compared with standard industry practice. **Good features** of the **ADF** scheme include:

- A requirement for on-farm monitoring of health and welfare by producers.

Key areas for improvement of the **ADF** scheme include:

- Prohibition of tethering;
- Greater space allowances;
- Prohibition of zero-grazing systems;
- Introducing a requirement to use anaesthesia and analgesia for all methods of disbudding and castration;
- Prohibition of the use of genetically engineered or cloned cattle and their offspring;
- Provision of adequate fibre;
- Later weaning age (preferably at least eight weeks);
- Strengthening of the recommendation to set targets for key health and welfare indicators to make this a firm requirement;
- Introducing a restriction on transport duration

(to a maximum of 8 hours or less) and prohibition of the live export of calves;

- Introduction of requirements aimed at avoiding breed-related health and welfare problems: This could be achieved by the introduction of fixed targets for all scheme members for key parameters such as longevity, fertility and levels of lameness, mastitis and metabolic diseases, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management;
- Prohibition of the killing of male dairy calves;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

SUMMARY OF THE RESULTS FOR DAIRY CATTLE SCHEMES:

1st	Soil Association (SA) 76 points (Silver farming system; Silver scheme)
2nd	RSPCA Freedom Food (RSPCA) 63 points (Bronze farming system; Bronze scheme)
3rd	Scottish Organic Producers Association (SOPA) 60 points (Gold system; Bronze scheme)
4th	Assured Dairy Farms – Red Tractor (ADF) 22 points

3.3 BEEF CATTLE

3.3.1 Summary of major welfare issues & selection of key criteria for beef cattle

Around two million cattle are reared for slaughter in the UK each year. Beef cattle in the UK may be housed in loose-housing systems with straw or on barren slatted floors or, less commonly, in cubicles or tie stalls. They may also be kept permanently at pasture. Often they are kept at pasture for an extended period and then brought indoors for several months for a final fattening stage. Housing over the winter period is also common. Compared with straw-bedded pens, housing on slatted floors is associated with higher mortality, difficulty in standing up and lying down, and a higher incidence of lesions to the carpal joint and the tail (SCAHAW, 2001). As with dairy cattle, prohibition of tethering, adequate space allowance, provision of adequate bedding and free range access are all classified as key criteria in the analysis of standards for beef cattle.

As with dairy cattle, the prohibition of disbudding (or at least a requirement to use anaesthetic) is considered as a key criterion for beef cattle. In addition, prohibition of castration (or a requirement to use anaesthetic) is considered as a key criterion for beef cattle. Castration is often performed to make animals easier to manage. However, there are certain advantages for producers in rearing entire bulls because bulls have faster growth rates, leaner carcasses and more efficient feed conversion compared to steers (*Ibid.*). In mainland Europe, male beef cattle are often left entire and fattened on concentrates to be slaughtered as young bulls. In the UK it is more common for male beef cattle to be castrated and kept at pasture for an extended period to be slaughtered at a later age, although they are often still brought indoors for a final fattening stage. The welfare benefits of access to pasture arguably offset the negative welfare impact of castration to some extent. Therefore, whilst we remain opposed to castration in principle, for beef cattle a requirement to use anaesthetic for castration is awarded full points for this criterion where the animals will benefit from an extended life at pasture. In the longer term, immunocastration may have a role to play in facilitating the phasing out of physical castration.

Weaning age is classified as a key criterion. Calves from suckler herds in the UK are usually reared with their dam and weaning does not take place until around six to ten months of age. However, much of the beef produced in the UK is from dairy-beef cross calves. These are typically removed from their dam within a day or two of birth and reared separately on milk or milk replacer, often being weaned abruptly as young as five weeks of age. Calves should not be weaned until at least eight weeks and preferably 12 weeks, as discussed in Section 3.2.1.

Beef cattle have been selectively bred for large muscles (large meat yield). This has resulted in a greater incidence of leg disorders and calving problems. Some breeds have a "double muscling" gene which causes them to have grossly oversized muscles. Animals may carry one copy (heterozygous) or two copies (homozygous) of the double muscling gene. Calving is particularly difficult for those animals with two copies of the gene and calves often have to be delivered by caesarean section (SCAHAW, 2001). These animals are also more susceptible to stress (*Ibid.*). SCAHAW states: *"Beef breeds have been selected for a high meat production. These breeds are often associated with a hypermuscularity which can cause leg disorders, increase calving difficulties and decrease cow longevity... Among hypermuscular animals, the homozygous carriers of myotrophin defective gene, or double muscled animals, need much more care due to their higher susceptibility to stress. A high proportion of caesareans are carried out in these animals... Homozygous double muscled animals have a wide range of problems and should not be used in beef production. The use of heterozygous animals bearing the double muscling gene would still entail welfare problems in the stock of parental homozygous animals"* (*Ibid.*). Prohibition of breeds that suffer from an increased incidence of calving difficulties or other health problems is classified as a key criterion.

3.3.2 Analysis of results for beef cattle

The criteria and key criteria (highlighted with an asterisk) used in the analysis of assurance scheme standards for beef cattle and the scores achieved by each of the schemes are shown in **Table 3.3**. The full results tables and scoring categories for beef cattle are given in **Appendix 3**.

Table 3.3: Scoring of assurance scheme standards for beef cattle

Key criteria are highlighted with an asterisk. Criteria are grouped into five sets. Totals for each set of criteria are converted to scores out of 20, which are totalled to give an overall score out of 100 for each scheme. Scores of ≥ 50 , ≥ 70 and ≥ 90 are classified as bronze, silver and gold systems respectively.

CRITERIA	ABM	QMS	RSPCA	SOPA	SA	Score from
Prohibition of tethering*	0	0	10	10	10	/10
Space allowance when housed*	2	0	4	8	8	/10
Flooring	0	0	4	4	4	/5
Provision of bedding*	0	0	10	10	10	/10
Lighting	1	1	2	5	3	/5
Free range access*	0	0	0	8	8	/10
Outdoor stocking density	0	0	0	5	5	/5
Provision of shelter & shade	3	3	5	5	5	/5
Social grouping	1	1	1	2	2	/5
Prohibition of individual housing of calves	2	2	2	4	4	/5
Total for environment criteria	9	7	38	61	59	/70
Score for environment	3	2	11	17	17	/20
Farming system classification	-	-	Bronze	Silver	Silver	
Prohibition of disbudding/dehorning*	0	6	6	2	2	/10
Prohibition of castration*	0	0	0	2	2	/10
Prohibition of GM/cloned animals & offspring	0	0	5	4	4	/5
Prohibition of embryo transfer	0	0	2	5	5	/5
Provision of forage in diet*	0	4	4	10	10	/10
Provision of iron & fibre for calves	1	1	3	3	3	/5
Weaning age*	2	0	4	10	10	/10
Monitoring of health and welfare by producers*	2	6	8	2	2	/10
Total for husbandry criteria	5	17	32	38	38	/65
Score for husbandry	2	5	10	12	12	/20
Prohibition of electric goads	1	0	5	5	5	/5
Training of stockpeople	2	2	3	2	2	/5
Frequency of checks	5	3	4	3	3	/5
Transport duration*	0	0	8	8	8	/10
Prohibition of live exports*	0	0	8	6	10	/10
Prohibition of use of livestock markets	0	0	3	3	3	/5
Specifications & monitoring of slaughter*	4	0	10	6	8	/10
Promotion of high welfare standards during transport & slaughter	4	2	4	2	3	/5
Total for stockmanship, handling, transport & slaughter criteria	16	7	45	35	42	/55
Score for stockmanship, handling, transport & slaughter	6	3	16	13	15	/20
Breeds permitted*	2	0	2	6	6	/10
Welfare of breeding bulls	0	1	3	3	3	/5
Total for genetics & breeding criteria	2	1	5	9	9	/15
Score for genetics & breeding	3	1	7	12	12	/20
Frequency of inspections by certifying body	2	4	4	4	4	/5
Spot-checks	1	2	5	1	3	/5
Monitoring of welfare outcomes by the scheme*	0	4	6	0	6	/10
Measures to address non-compliance	5	5	5	5	5	/5
Total for auditing criteria	8	15	20	10	18	/25
Score for auditing	6	12	16	8	14	/20
OVERALL WELFARE SCORE	20	23	60	62	70	/100
Overall scheme classification	-	-	Bronze	Bronze	Silver	

Overall, the **SA** scheme achieves the highest score, with 70 points out of a possible 100, giving a silver scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of tethering;
- Significantly greater space allowances;
- Prohibition of fully-slatted floors;
- Provision of adequate bedding;
- Access to pasture throughout the grazing season (except that cattle may be finished in straw yards for a period of no more than one fifth of their life with an absolute maximum of three months);
- Provision of adequate shelter and shade;
- Prohibition of individual housing of calves after seven days of age and of selling calves into intensive systems;
- Prohibition of embryo transfer and the use of genetically engineered or cloned cattle;
- A requirement for at least 60% of the animals' diet to consist of fodder, roughage or silage;
- Prohibition of electric goads;
- A restriction on transport duration to eight hours and prohibition of the live export of calves under one month old and of cattle for slaughter;
- Restrictions on the use of livestock markets;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- A requirement to use breeds that do not suffer from an increased incidence of health problems associated with intensive production or problems at birth;
- A system of monitoring welfare outcomes by the assurance scheme.

However, there is still room for improvement. The **SA** scheme achieves a silver classification for the farming system but is only one point away from a gold classification. A number of improvements in certain areas would allow this scheme to achieve a gold classification for both the farming system and the scheme as a whole. **Key areas for improvement** include:

- Removal of the exception from the requirement for free range access that currently applies to the final fattening stage;
- Introducing a requirement to use polled breeds or to breed for polling (unless horns are left intact) in order to avoid disbudding. Failing this, at least a requirement to use anaesthesia and analgesia for all methods

of disbudding and castration, in line with Commission Regulation (EC) No 889/2008, which requires that "*adequate anaesthesia and/or analgesia*" must be applied;

- Strengthening of the prohibition of genetically engineered and cloned cattle to also prohibit the use of their offspring;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Complete prohibition of the use of livestock markets;
- Strengthening of the requirements on breed: This could be achieved by completely prohibiting the use of double-musled breeds and the introduction of fixed targets for all scheme members for key parameters such as longevity and levels of lameness and calving problems, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

SOPA scores 62 points, giving a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of tethering;
- Significantly greater space allowances;
- Prohibition of fully-slatted floors;
- Provision of adequate bedding;
- Access to pasture throughout the grazing season (except that cattle may be finished in straw yards for a period of no more than one fifth of their life with an absolute maximum of three months);
- Provision of adequate shelter and shade;
- Prohibition of individual housing of calves after seven days of age;
- Prohibition of embryo transfer and the use of genetically engineered or cloned cattle;
- A requirement for at least 60% of the animals' diet to consist of fodder, roughage or silage;
- Prohibition of electric goads;
- A restriction on transport duration to eight hours;
- Restrictions on the use of livestock markets;
- A requirement to use breeds that do not suffer from an increased incidence of health problems associated with intensive production or problems at birth.

The **SOPA** scheme achieves a silver classification for the farming system but is only one point away from a gold system classification and a number of improvements in certain areas would allow this scheme to achieve a gold classification for both the farming system and the scheme as a whole. **Key areas for improvement** include:

- Introducing a requirement to use polled breeds or to breed for polling (unless horns are left intact) in order to avoid disbudding. Failing this, at least a requirement to use anaesthesia and analgesia for all methods of disbudding, and for castration, in line with Commission Regulation (EC) No 889/2008, which requires that “adequate anaesthesia and/or analgesia” must be applied;
- Strengthening of the prohibition of genetically engineered and cloned cattle to also prohibit the use of their offspring;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Complete prohibition of the use of livestock markets;
- Strengthening of the requirements on breed: This could be achieved by completely prohibiting the use of double-musled breeds and the introduction of fixed targets for all scheme members for key parameters such as longevity and levels of lameness and calving problems, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

The **RSPCA** scheme achieves a total of 60 points and a bronze scheme classification, which is in line with its bronze farming system classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of tethering;
- Greater space allowances in loose housing systems;
- Prohibition of fully-slatted floors;
- Provision of adequate bedding;
- A requirement to use local anaesthesia for disbudding;

- Prohibition of the use of genetically engineered or cloned cattle and their offspring;
- Restrictions on the use of embryo transfer;
- Provision of fibre;
- A requirement for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Prohibition of electric goads;
- A requirement for training of stockpeople;
- A restriction on transport duration to eight hours and prohibition of the live export of calves;
- Restrictions on the use of livestock markets;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- Work is currently underway towards the development of a system of monitoring welfare outcomes by the assurance scheme.

Key areas for improvement of the **RSPCA** scheme include:

- Provision of access to pasture during the grazing season;
- Introducing a requirement to use anaesthesia and analgesia for castration;
- Complete prohibition of the use of livestock markets;
- Strengthening of the requirements on breed: This could be achieved by completely prohibiting the use of double-musled breeds and the introduction of fixed targets for all scheme members for key parameters such as longevity and levels of lameness and calving problems, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

The **QMS** and **ABM** schemes score 23 and 20 points respectively. These schemes offer few welfare benefits compared with standard industry practice. **Good features** of the **QMS** scheme include:

- A requirement to adhere to government welfare codes;
- A requirement to use local anaesthesia for disbudding;
- A requirement for on-farm monitoring of health and welfare by producers, including improvement targets;
- Work is currently underway towards the development of a system of monitoring welfare outcomes by the assurance scheme.

Good features of the **ABM** scheme include:

- More stringent requirements for the frequency of checks for signs of illness, injury or disease.

Key areas for improvement of the **QMS** and **ABM** schemes include:

- Prohibition of tethering;
- Greater space allowances;
- Prohibition of zero-grazing systems;
- Introducing a requirement to use anaesthesia and analgesia for castration (and also for all methods of disbudding for the ABM scheme);
- Prohibition of the use of genetically engineered or cloned cattle and their offspring;
- Provision of adequate fibre;
- Introducing a restriction on transport duration (to eight hours or less) and prohibition of the live export of cattle for slaughter;
- Introduction of requirements aimed at avoiding breed-related health and welfare problems: This could be achieved by the introduction of fixed targets for all scheme members for key parameters such as longevity and levels of lameness and calving problems, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

Additionally, for **ABM**:

- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators, and development of a system of monitoring welfare outcomes by the assurance scheme.

SUMMARY OF THE RESULTS FOR BEEF CATTLE SCHEMES:

1st	Soil Association (SA) 70 points (Silver farming system; Silver scheme)
2nd	Scottish Organic Producers Association (SOPA) 62 points (Silver farming system; Bronze scheme)
3rd	RSPCA Freedom Food (RSPCA) 60 points (Bronze farming system; Bronze scheme)
4th	Quality Meat Scotland (QMS) 23 points
5th	Assured British Meat – Red Tractor (ABM) 20 points

3.4 SHEEP

3.4.1 Summary of major welfare issues & selection of key criteria for sheep

There are around 21 million sheep in the UK flock and over 13 million sheep and lambs are slaughtered for meat each year. Most sheep in the UK have access to pasture but they are often housed over the winter and for lambing. Some lambs are fattened entirely indoors, especially those born early in the season, and dairy sheep may also be housed for longer periods. As with beef cattle, prohibition of tethering, adequate space allowance, provision of adequate bedding and free range access are all classified as key criteria in the analysis of standards for sheep.

Lambs are routinely subjected to a number of mutilations, which cause acute pain and distress and chronic pain which may last for days or even weeks after the procedure (FAWC, 2008). Castration of male lambs is widely performed to ease management. The UK Farm Animal Welfare Council (FAWC) advises that marketing of entire male lambs up to 12 months of age does not present any particular concerns and may even have commercial benefits, including heavier carcasses with a lower fat content. They recommend: *“All parties concerned should work towards the ideal situation where all male lambs are either not castrated or, when this is necessary, castrated using pain relief”* (Ibid.).

Tail docking is widely performed to help reduce the level of faecal soiling and the risk of flystrike. Ware *et al* (2000) concluded that amputation of the tail is not necessary to maintain the health and welfare of prime lambs. FAWC (2008) concludes: *“Tail docking is often performed out of tradition rather than necessity and, at best, may only be partially effective in reducing flystrike... Greater effort should be directed towards prevention of flystrike by methods other than tail docking.”* They recommend: *“Both castration and tail docking are painful mutilations that should be avoided wherever possible.”* Prohibition of castration and tail docking (or at least a requirement to use anaesthetic) are both classified as key criteria.

Weaning age is considered as a key criterion in the analysis. Many lambs in the UK are reared with their dam and are not weaned until several months of age or may be sent for slaughter when they are still unweaned. However, lambs from dairy flocks are typically weaned earlier, some as young as four weeks. Natural weaning of lambs takes place at around six months of age. The functional development of the digestive system in lambs can be divided into three phases: 'non-ruminant' (up to three weeks), 'transition' (three to eight weeks) and 'ruminant' (after eight weeks) (Wardrop and Coombe, 1960). By around eight weeks of age, the rumen is fully-functional in lambs and they can digest herbage with the efficiency of an adult sheep. Lambs should therefore not be weaned until at least seven or eight weeks of age. A number of studies indicate that weaning at eight weeks is acceptable for lambs (Abou Ward *et al*, 2008). Weaning earlier than this can result in increased mortality (Al-Saigh and Al-Timimi, 1986).

High quality stockmanship is crucial for the welfare of sheep. There has been a trend over the past few decades for flock sizes to increase, while the number of shepherds looking after them has fallen. The ratio of sheep to shepherd has therefore increased dramatically. Inadequate flock supervision can lead to high levels of lamb mortality and delayed treatment of infectious conditions, injuries and other health problems, resulting in poor welfare.

Selective breeding of sheep has increased the number of lambs born per parturition, with twins and triplets being increasingly common. This has resulted in a higher incidence of lambing difficulties in some breeds. Sheep breeds also differ in their susceptibility to various conditions such as footrot and fly strike (SAC, 2005). The use of sheep breeds selected for "easy-care" characteristics, such as increased longevity, lambing ease, improved lamb survival and resistance to footrot and fly strike, can significantly improve welfare provided this is combined with adequate flock supervision. Prohibition of breeds associated with an increased incidence of lambing difficulties or other health problems is considered as a key criterion in the analysis.

3.4.2 Analysis of results for sheep

The criteria and key criteria (highlighted with an asterisk) used in the analysis of assurance scheme standards for sheep and the scores achieved by each of the schemes are shown in **Table 3.4**. The full results tables and scoring categories for sheep are given in **Appendix 4**.

Table 3.4: Scoring of assurance scheme standards for sheep

Key criteria are highlighted with an asterisk. Criteria are grouped into five sets. Totals for each set of criteria are converted to scores out of 20, which are totalled to give an overall score out of 100 for each scheme. Scores of ≥ 50 , ≥ 70 and ≥ 90 are classified as bronze, silver and gold systems respectively.

CRITERIA	ABM	QMS	RSPCA	SOPA	SA	Score from
Prohibition of tethering*	0	0	10	10	10	/10
Space allowance when housed*	2	2	4	10	4	/10
Flooring	0	0	4	4	4	/5
Provision of bedding*	0	0	10	10	10	/10
Lighting	1	1	4	5	3	/5
Free range access*	0	0	8	8	8	/10
Outdoor stocking density	0	0	0	5	5	/5
Provision of shelter & shade	3	3	5	5	5	/5
Social grouping	1	1	2	3	2	/5
Total for environment criteria	7	7	47	60	51	/65
Score for environment	2	2	14	18	16	/20
System classification	-	-	Silver	Gold	Silver	
Prohibition of tail docking*	0	0	2	2	2	/10
Prohibition of castration*	0	0	2	2	2	/10
Prohibition of GM/cloned animals & offspring	0	0	0	4	4	/5
Provision of forage in diet*	0	0	6	10	10	/10
Weaning age*	0	2	0	8	8	/10
Monitoring of health and welfare by producers*	2	6	8	2	2	/10
Total for husbandry criteria	2	8	18	28	28	/55
Score for husbandry	1	3	7	10	10	/20
Prohibition of electric goads	5	5	5	5	5	/5
Training of stockpeople	2	2	3	2	2	/5
Frequency of checks	5	3	4	3	3	/5
Transport duration*	0	0	8	8	8	/10
Prohibition of live exports*	0	0	8	8	10	/10
Prohibition of use of livestock markets	0	0	5	3	3	/5
Specifications & monitoring of slaughter*	4	2	8	6	8	/10
Promotion of high welfare standards during transport & slaughter	4	2	4	2	3	/5
Total for stockmanship, handling, transport & slaughter criteria	20	14	45	37	42	/55
Score for stockmanship, handling, transport & slaughter	7	5	16	13	15	/20
Breeds permitted*	2	0	0	6	6	/10
Welfare of breeding rams	1	1	3	3	3	/5
Prohibition of killing of male dairy lambs	0	0	0	0	0	/5
Total for genetics & breeding criteria	3	1	3	9	9	/20
Score for genetics & breeding	3	1	3	9	9	/20
Frequency of inspections by certifying body	2	4	4	4	4	/5
Spot-checks	1	2	5	1	3	/5
Monitoring of welfare outcomes by the scheme*	0	4	6	0	6	/10
Measures to address non-compliance	5	5	5	5	5	/5
Total for auditing criteria	8	15	20	10	18	/25
Score for auditing	6	12	16	8	14	/20
OVERALL WELFARE SCORE	19	23	56	58	64	/100
Overall scheme classification	-	-	Bronze	Bronze	Bronze	

Overall, the **SA** scheme achieves the highest score, with 64 points out of a possible 100, giving a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of tethering;
- Prohibition of fully-slatted floors;
- Provision of adequate bedding;
- Access to pasture during the grazing season (except that ewes may be housed for lambing);
- Provision of adequate shelter and shade;
- A requirement to provide justification on health/welfare grounds in order to carry out tail docking or castration;
- Prohibition of the use of genetically engineered or cloned sheep;
- A requirement for at least 60% of the animals' diet to consist of fodder, roughage or silage;
- Later weaning age (minimum 45 days);
- A restriction on transport duration to eight hours and prohibition of the live export of sheep for slaughter;
- Restrictions on the use of livestock markets;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- A requirement to use breeds that do not suffer from an increased incidence of health problems associated with intensive production or lambing problems;
- A system of monitoring welfare outcomes by the assurance scheme.

However, there is still room for improvement. The **SA** scheme achieves a silver classification for the farming system and a number of improvements in certain areas would allow this scheme to achieve a silver classification or higher for both the farming system and the scheme as a whole. **Key areas for improvement** include:

- Increased space allowances when housed;
- Strengthening of the requirements for free range access to ensure that lambs are not born early in the season and sent for slaughter before being turned out to pasture in the spring (e.g. by requiring a minimum proportion of their life to be spent at pasture);
- Prohibition of tail docking or a requirement to use short-tailed breeds or to breed for shorter tails. Failing this, at least a requirement to use anaesthesia and analgesia for all methods of tail docking in line with Commission

Regulation (EC) No 889/2008, which requires that “adequate anaesthesia and/or analgesia” must be applied;

- Prohibition of castration, or at least a requirement to use anaesthesia and analgesia in line with the requirements of Commission Regulation (EC) No 889/2008;
- Strengthening of the prohibition of genetically engineered and cloned sheep to also prohibit the use of their offspring;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Complete prohibition of the use of livestock markets;
- Strengthening of the requirements on breed. This could be achieved by the introduction of fixed targets for all scheme members for key parameters such as longevity, lamb survival and levels of lameness and lambing problems, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

SOPA scores 58 points, giving a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of tethering;
- Significantly greater space allowances;
- Prohibition of fully-slatted floors;
- Provision of adequate bedding;
- Access to pasture during the grazing season (except that ewes may be housed for lambing);
- Provision of adequate shelter and shade;
- A requirement to provide justification on health/welfare grounds in order to carry out tail docking or castration;
- Prohibition of the use of genetically engineered or cloned sheep;
- A requirement for at least 60% of the animals' diet to consist of fodder, roughage or silage;
- Later weaning age (minimum 45 days);
- A restriction on transport duration to eight hours;
- Restrictions on the use of livestock markets;
- A requirement to use breeds that do not suffer from an increased incidence of health problems associated with intensive production or problems at birth.

The **SOPA** scheme achieves a gold classification for the farming system but the scheme is let down by a number of features that could be rectified to achieve a gold classification for the scheme as a whole. **Key areas for improvement** include:

- Prohibition of tail docking or a requirement to use short-tailed breeds or to breed for shorter tails. Failing this, at least a requirement to use anaesthesia and analgesia for all methods of tail docking in line with Commission Regulation (EC) No 889/2008, which requires that “adequate anaesthesia and/or analgesia” must be applied;
- Prohibition of castration, or at least a requirement to use anaesthesia and analgesia in line with the requirements of Commission Regulation (EC) No 889/2008;
- Strengthening of the prohibition of genetically engineered and cloned sheep to also prohibit the use of their offspring;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Complete prohibition of the use of livestock markets;
- Strengthening of the requirements on breed. This could be achieved by the introduction of fixed targets for all scheme members for key parameters such as longevity, lamb survival and levels of lameness and lambing problems, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

The **RSPCA** scheme achieves a total of 56 points and a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of tethering;
- Prohibition of fully-slatted floors;
- Provision of adequate bedding;
- Access to pasture during the grazing season;
- Provision of adequate shelter and shade;
- Restrictions on tail docking and castration;
- Provision of fibre;
- A requirement for on-farm monitoring of

health and welfare by producers, including targets for key welfare indicators;

- A requirement for training of stockpeople;
- A restriction on transport duration to eight hours;
- Prohibition of the sale of sheep through livestock markets;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- Work is currently underway towards the development of a system of monitoring welfare outcomes by the assurance scheme.

The **RSPCA** scheme achieves a silver classification for the farming system and, with a number of improvements in certain areas, could achieve a silver classification for the scheme as a whole.

Key areas for improvement include:

- Prohibition of tail docking or a requirement to use short-tailed breeds or to breed for shorter tails. Failing this, at least a requirement to use anaesthesia and analgesia for all methods of tail docking;
- Prohibition of castration, or at least a requirement to use anaesthesia and analgesia;
- Prohibition of the use of genetically modified or cloned sheep and their offspring;
- Later weaning age (preferably at least seven weeks);
- Introduction of requirements aimed at avoiding breed-related health and welfare problems: This could be achieved by the introduction of fixed targets for all scheme members for key parameters such as longevity, lamb survival and levels of lameness and lambing problems, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

The **QMS** and **ABM** schemes score 23 and 19 points respectively. These schemes offer few welfare benefits compared with standard industry practice. **Good features** of the **QMS** scheme include:

- A requirement to adhere to government welfare codes;
- A requirement for on-farm monitoring of health and welfare by producers, including improvement targets;
- Work is currently underway towards the development of a system of monitoring welfare outcomes by the assurance scheme.

Good features of the **ABM** scheme include:

- More stringent requirements for the frequency of checks for signs of illness, injury or disease.

Key areas for improvement of the **QMS** and **ABM** schemes include:

- Prohibition of tethering;
- Greater space allowances;
- Prohibition of zero-grazing systems;
- Introducing a requirement to use anaesthesia and analgesia for tail docking and castration;
- Prohibition of the use of genetically engineered or cloned sheep and their offspring;
- Provision of adequate fibre;
- Introducing a restriction on transport duration (to eight hours or less) and prohibition of the live export of sheep for slaughter;
- Introduction of requirements aimed at avoiding breed-related health and welfare problems: This could be achieved by the introduction of fixed targets for all scheme members for key parameters such as longevity, lamb survival and levels of lameness and lambing problems, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

Additionally, for **ABM**:

- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

SUMMARY OF THE RESULTS FOR SHEEP SCHEMES:

1st	Soil Association (SA) 64 points (Silver farming system; Bronze scheme)
2nd	Scottish Organic Producers Association (SOPA) 58 points (Gold farming system; Bronze scheme)
3rd	RSPCA Freedom Food (RSPCA) 56 points (Silver farming system; Bronze scheme)
4th	Quality Meat Scotland (QMS) 23 points
5th	Assured British Meat – Red Tractor (ABM) 19 points

3.5 BROILER (MEAT) CHICKENS

3.5.1 Summary of major welfare issues for broiler chickens & selection of key criteria

Around 800 million broiler chickens are slaughtered in the UK each year. Most are reared at high stocking densities in large closed sheds. In some countries, broilers may be reared in cages. This is not practised in the UK but prohibition of cages is nonetheless included as a criterion in the analysis because it is considered vital that such a practice should not be permitted to start in the UK.

Stocking density is a crucial factor affecting the welfare of broiler chickens and is classified as a key criterion in the analysis. SCAHAW (2000) states: *“The greatest threat to broiler welfare due to behavioural restriction would appear to be likely constraints on locomotor and litter directed activities caused by crowding, and consequences for leg weakness, poor litter quality and contact dermatitis... It is clear from the behaviour and leg disorder studies that the stocking density must be 25kg/m² or lower for major welfare problems to be largely avoided and that above 30kg/m², even with very good environmental control systems, there is a steep rise in the frequency of serious problems.”* The SCAHAW report recognises the importance of environmental conditions and that welfare problems may arise at much lower densities when ventilation and management are poor. They advise that any recommendations on stocking rate should take this into account. However, they stress that this should only apply up to an absolute maximum of 30 kg/m², even where good environmental conditions can be maintained.

A number of studies conducted since the SCAHAW report was published confirm these findings. For example, Sørensen *et al* (2000) found that higher stocking density was associated with poorer walking ability and more foot and hock burns. The authors conclude that lower stocking density substantially reduced the prevalence of leg weakness.

A large-scale study by Dawkins *et al* (2004) compared target stocking densities ranging from 30 to 46 kg/m². The results highlight the importance of environmental conditions and also indicate a clear effect of stocking density on important welfare parameters. The proportion of lame birds (those with a gait score higher than zero) increased as stocking density increased, with around double the proportion of

lame birds at the highest density compared with the lowest density. Birds also jostled each other more and growth rate decreased as stocking density increased.

A large-scale Defra-funded study also confirmed that higher stocking densities increase levels of leg disorder (Knowles *et al*, 2008). For every 1 kg/m² increase in stocking density (as measured at the time of flock assessment) across a range from 15.9 to 44.8 kg/m², the authors reported that flock gait score increased by 0.013. Gait scoring is a method used to assess walking ability, with a higher score indicating a greater degree of lameness. Broiler gait score is typically measured on a scale from 0 (normal gait) to 5 (immobile).

Stocking density for intensively reared broilers in the UK is typically 38 kg/m², which is much too high for good welfare, although EU legislation permits even higher levels – up to 39 or even 42 kg/m² if certain conditions are met. In some cases, sheds are stocked at a level that would result in a significantly higher stocking density by the time the birds reach slaughter weight but then some of the birds are removed for slaughter earlier, with the remainder left to continue growing to a higher weight. This is called “thinning”. The practice of thinning is common and is increasing (Sheppard and Edge, undated). Thinning causes stress, threatens biosecurity and results in birds being overcrowded for a longer period. Knowles *et al* (2008) found higher levels of lameness in flocks that had previously been thinned, possibly due to the stress involved.

Environmental enrichment is important to encourage exercise and provide opportunities for dustbathing, foraging and exploratory behaviour. The provision of litter material is a legal requirement in the EU but birds should also be provided with additional enrichment such as perches, straw bales, roughage and pecking objects. Ideally, birds should have free range access to provide a more complex and stimulating environment with greater opportunities for exercise and a wide range of natural behaviours. Provision of enrichment and free range access are both considered as key criteria in the analysis.

Beak trimming of broiler chickens is generally not considered necessary and is rarely performed. However, prohibition of beak trimming is

nonetheless included as a criterion in the analysis because it is important to ensure that this practice does not become more common.

The methods used for catching and handling broilers prior to transportation and slaughter are classified as a key criterion, as this process can be extremely stressful, with handfuls of birds often caught and carried by a single leg.

The prohibition of shackling and its replacement with controlled atmosphere stunning is considered as a key criterion in the analysis. The AHAW Panel states: *“restraint applied by humans during shackling, and hanging inverted on shackles are distressing and painful to birds. The legs of birds are inevitably compressed during shackling and the degree of compression could be as high as 20%, which is extremely painful”* (AHAW, 2004a).

Replacement of shackling with controlled atmosphere stunning using non-aversive gases is required for the top score for this criterion. Scientific evidence shows that carbon dioxide is aversive to poultry and that welfare is improved by the use of non-aversive gases. The AHAW Panel states: *“Concentrations of more than 30% CO₂ are aversive and may cause pain and respiratory distress before loss of consciousness”* (AHAW, 2004a). The AHAW Panel recommends: *“Since welfare is poor when the shackling line and water bath electrical stunning method is used, and birds are occasionally not stunned before slaughter, the method should be replaced as soon as possible. At present, the inert gas stunning method is the best alternative”* (AHAW, 2004a). It is recognised that on-farm slaughter offers certain welfare benefits by avoiding the journey to a slaughterhouse. An exception from the requirement for gas stunning therefore applies to on-farm slaughter, where restraint in cones or soft (e.g. leather) shackles qualifies for the top scores.

Broiler chickens are bred for fast growth, efficient feed conversion and large breast meat yield. Modern commercial broilers now reach a slaughter weight of 2 to 2.5 kg in 35-40 days compared with 12 weeks 30 years ago (Broom, 2009). This has resulted in serious health problems, including lameness and cardiovascular disorders. Fast-growing broiler chickens suffer from a number of cardiovascular disorders that can cause sudden death and are responsible for a major portion of flock mortality (Julian, 2005).

Leg disorders are a major cause of pain and poor welfare in broiler chickens. Lame birds will self-select feed containing the anti-inflammatory drug carprofen (Danbury *et al*, 2000). Danbury *et al* concluded that birds with a gait score of three or above consumed more carprofen, indicating that they are in pain. A re-analysis of the data from this study suggests that all birds with a gait score of one or above had significantly higher carprofen intakes (Webster, 2005a). Webster concludes that *“all lameness hurts”*.

A large-scale study into leg disorders in broilers (Knowles *et al*, 2008) found that on average 97.8% of chickens showed some degree of gait abnormality (gait score one or higher) and 27.6% had a gait score of three or higher. Given the conclusions of Danbury *et al* (2000) and Webster (2005a) above, this suggests that at least more than a quarter, and probably the vast majority, of commercially reared fast-growing broilers are likely to experience pain as a result of lameness. Knowles *et al* (2008) conclude: *“The primary risk factors associated with impaired locomotion and poor leg health are those specifically associated with rate of growth”*.

Another consequence of breeding for fast growth rate is that the birds kept for breeding are subjected to severe feed restriction in order to reduce mortality and health problems associated with excessive weight gain, causing them to be *“chronically hungry, frustrated and stressed”* (Savory *et al*, 1993). SCAHAW concludes: *“It is clear that the major welfare problems in broilers are those which can be regarded as side effects of the intense selection mainly for growth and feed conversion. These include leg disorders, ascites, sudden death syndrome in growing birds and welfare problems in breeding birds such as severe food restriction. It is apparent that the fast growth rate of current broiler strains is not accompanied by a satisfactory level of welfare including health”* (SCAHAW, 2000). The prohibition of fast-growing breeds is considered as a key criterion in the analysis, and prohibition of feed restriction is included as a criterion in the scoring of breeding bird welfare.

3.5.2 Analysis of results for broiler chickens

The criteria and key criteria (highlighted with an asterisk) used in the analysis of assurance scheme standards for broiler chickens and the scores achieved by each of the schemes are shown in **Table 3.5**. The full results tables and scoring categories for broiler chickens are given in **Appendix 5**.

Table 3.5: Scoring of assurance scheme standards for broiler chickens

Key criteria are highlighted with an asterisk. Criteria are grouped into five sets. Totals for each set of criteria are converted to scores out of 20, which are totalled to give an overall score out of 100 for each scheme. Scores of ≥ 50 , ≥ 70 and ≥ 90 are classified as bronze, silver and gold systems respectively.

CRITERIA	ACP minimum	ACP free-range	RSPCA minimum	RSPCA free-range	SOPA	SA	Score from
Prohibition of cages	5	5	5	5	5	5	/5
Indoor stocking density*	2	6	6	6	10	10	/10
Prohibition of thinning	0	4	3	5	4	4	/5
Environmental conditions	3	3	5	5	3	3	/5
Provision of litter & indoor enrichment*	4	6	10	10	8	6	/10
Lighting	1	3	4	4	5	5	/5
Free-range access*	0	8	0	8	10	10	/10
Outdoor stocking density	0	3	0	3	5	5	/5
Provision of cover & protection from predators	0	2	0	4	4	4	/5
Flock size	0	0	0	0	3	3	/5
Total for environment criteria	15	40	33	50	57	55	/65
Score for environment	5	12	10	15	18	17	/20
Farming system classification	-	Bronze	Bronze	Silver	Gold	Silver	-
Prohibition of beak trimming	5	5	5	5	5	5	/5
Prohibition of GM/cloned animals & offspring	0	0	0	0	4	4	/5
Duration of feed withdrawal	4	4	4	4	0	3	/5
Monitoring of health and welfare by producers*	8	8	10	10	2	6	/10
Total for husbandry criteria	17	17	19	19	11	18	/25
Score for husbandry	14	14	15	15	9	14	/20
Catching/handling*	0	0	6	6	6	6	/10
Training of stockpeople	3	3	4	4	2	2	/5
Frequency of checks	4	4	4	4	5	5	/5
Transport duration*	6	6	8	8	8	8	/10
Humane slaughter methods*	0	0	6	6	2	2	/10
Specifications & monitoring of slaughter*	6	6	10	10	2	6	/10
Promotion of high welfare standards during catching, transport & slaughter	4	4	4	4	2	3	/5
Total for stockmanship, handling, transport & slaughter criteria	23	23	42	42	27	32	/55
Score for stockmanship, handling, transport & slaughter	8	8	15	15	10	12	/20
Breeds permitted*	0	0	6	6	6	8	/10
Welfare of breeding birds	2	2	0	0	0	4	/5
Total for genetics & breeding criteria	2	2	6	6	6	12	/15
Score for genetics & breeding	3	3	8	8	8	16	/20
Frequency of inspections by certifying body	4	4	4	4	4	4	/5
Targeted unannounced spot-checks	1	1	5	5	1	3	/5
Monitoring of welfare outcomes by the scheme*	2	2	6	6	0	6	/10
Measures to address non-compliance	5	5	5	5	5	5	/5
Total for auditing criteria	12	12	20	20	10	18	/25
Score for auditing	10	10	16	16	8	14	/20
OVERALL WELFARE SCORE	40	47	64	69	53	73	/100
Overall scheme classification	-	-	Bronze	Bronze	Bronze	Silver	

Overall, the **SA** scheme achieves the highest score, with 73 points out of a possible 100, giving a silver scheme classification. Compared with standard industry practice, this scheme offers many **welfare advantages**, including:

- Much lower stocking densities (including a limit on the number of birds per square metre as well as on the weight of birds per square metre to prevent birds being overstocked and then thinned);
- Free-range access;
- Provision of overhead cover on the range;
- Smaller flock sizes;
- A requirement for on-farm monitoring of health and welfare by producers;
- A restriction on transport duration to eight hours;
- Prohibition of carbon dioxide stunning;
- A requirement to use slower-growing breeds (otherwise a minimum slaughter age of 81 days applies to discourage the use of fast-growing breeds);
- Prohibition of feed restriction of breeding birds;
- A system of monitoring welfare outcomes by the assurance scheme.

However, there is still room for improvement. The **SA** scheme achieves a silver classification for the farming system but is only one point away from a gold system classification and a number of improvements in certain areas would allow this scheme to achieve a gold classification for both the farming system and the scheme as a whole. **Key areas for improvement** include:

- Provision of additional indoor enrichment such as perches, straw bales, roughage and pecking objects;
- Introducing targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Prohibition of shackling of live birds and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Strengthening of the requirement to use slower-growing breeds through complete prohibition of fast-growing breeds.

The **RSPCA free-range standards** achieve the next highest score, with 69 points, giving a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Lower stocking densities and a restriction on thinning;
- Provision of indoor enrichment including perches, straw bales and pecking objects;
- Free-range access;
- Provision of overhead cover on the range;
- A requirement for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Stringent requirements for training of stockpeople;
- A restriction on transport duration to eight hours;
- Prohibition of stun/kill systems using carbon dioxide at concentrations above 30%;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- A requirement to use moderately slower-growing breeds;
- A system of monitoring welfare outcomes by the assurance scheme.

The **RSPCA free-range standards** achieve a silver classification for the farming system and are only two points away from achieving a silver classification for the scheme as a whole. **Key areas for improvement** include:

- A reduction in flock sizes;
- Prohibition of shackling of live birds and complete prohibition of carbon dioxide stunning and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Introduction of welfare standards for breeding birds.

The **RSPCA minimum standards** achieve the next highest score, with 64 points, giving a bronze scheme classification. Compared with standard industry practice, these standards offer a number of **welfare advantages**, including:

- Lower stocking densities and a restriction on thinning;
- Provision of enrichment including perches, straw bales and pecking objects;
- A requirement for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Stringent requirements for training of stockpeople;
- A restriction on transport duration to eight hours;

- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- A requirement to use moderately slower-growing breeds;
- A system of monitoring welfare outcomes by the assurance scheme.

The bronze scheme classification for the **RSPCA minimum standards** is in line with their bronze farming system classification. **Key areas for improvement** include:

- A reduction in flock sizes;
- Prohibition of shackling of live birds and complete prohibition of carbon dioxide stunning and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Introduction of welfare standards for breeding birds.

The **SOPA** scheme scores 53 points, giving a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Much lower stocking densities (including a limit on the number of birds per square metre as well as on the weight of birds per square metre to prevent birds being overstocked and then thinned);
- Free-range access;
- Provision of overhead cover on the range;
- Smaller flock sizes;
- A restriction on transport duration to eight hours;
- Prohibition of carbon dioxide stunning;
- A requirement to use slower-growing breeds (otherwise a minimum slaughter age of 81 days applies to discourage the use of fast-growing breeds).

The **SOPA** scheme achieves a gold farming system classification but the scheme overall is let down by a number of features that could be rectified to achieve a gold classification for the scheme as a whole. **Key areas for improvement** include:

- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;

- Prohibition of shackling of live birds and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Strengthening of the requirement to use slower-growing breeds through complete prohibition of fast-growing breeds;
- Introduction of welfare standards for breeding birds;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

The **ACP** scheme scores 47 points for its **free-range standards** and 40 points for its **minimum standards**. Compared with standard industry practice, the **ACP free-range standards** offer a number of **welfare advantages**, including:

- Lower stocking densities (including a limit on the number, as well as the weight, of birds per square metre to prevent birds being overstocked and then thinned);
- Provision of enrichment, including perches and straw bales;
- Free-range access;
- A requirement for on-farm monitoring of health and welfare by producers, although the targets for key welfare indicators are rather unambitious.

The **ACP free-range standards** achieve a bronze classification for the farming system but the scheme is let down by a number of features that could be rectified in order to achieve a bronze classification for the scheme as a whole. **Key areas for improvement** include:

- Provision of adequate overhead cover on the range;
- A reduction in flock sizes;
- Strengthening of the targets for key welfare indicators;
- Shorter transport duration (eight hours or less);
- Prohibition of shackling of live birds and prohibition of carbon dioxide stunning and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Introduction of a requirement to use breeds that are at least moderately slower-growing;
- Development of a system of monitoring welfare outcomes.

The **ACP minimum standards** offer few welfare benefits compared with standard industry practice, although the limit on

stocking density to 38 kg/m², whilst still well in excess of the levels recommended by the EU Scientific Committee on Animal Health and Welfare (SCAHAW), is an improvement on minimum EU legislative standards, which permit stocking densities up to 39 kg/m² or even 42 kg/m² if certain conditions are met. Other **good features** include:

- A requirement for on-farm monitoring of health and welfare by producers, although the targets for key welfare indicators are unambitious;
- A requirement for training of stockpeople.

Key areas for improvement of the **ACP minimum standards** include:

- A reduction in stocking density;
- Provision of enrichment such as perches, straw bales, roughage and pecking objects;
- Strengthening of the targets for key welfare indicators;
- Shorter transport duration (eight hours or less);
- Prohibition of shackling of live birds and prohibition of carbon dioxide stunning and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Introduction of a requirement to use breeds that are moderately slower-growing, or at least the introduction of targets for the levels of leg disorders with a requirement to change the breed if these levels are exceeded;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

SUMMARY OF THE RESULTS FOR BROILER CHICKEN SCHEMES:

1st	Soil Association 73 points (Silver farming system; Silver scheme)
2nd	RSPCA Freedom Food free range 69 points (Silver farming system; Bronze scheme)
3rd	RSPCA Freedom Food minimum 64 point (Bronze farming system; Bronze scheme)
4th	Scottish Organic Producers Association 53 (Gold farming system; Bronze scheme)
5th	Assured Chicken Production (Red Tractor) free range 47 points (Bronze farming system)
6th	Assured Chicken Production (Red Tractor) minimum 40 points

3.6 TURKEYS

3.6.1 Summary of key welfare issues & selection of key criteria for turkeys

Around 15 million turkeys are slaughtered in the UK each year. Turkeys are reared and slaughtered in much the same way as broiler chickens and suffer from many of the same welfare problems. As with broiler chickens, stocking density, provision of environmental enrichment, free range access, catching and handling methods, and prohibition of the shackling of live birds and its replacement with controlled atmosphere stunning systems using non-aversive gases, are considered as key criteria in the analysis.

An additional welfare issue for turkeys is that beak trimming is often performed in an attempt to reduce injuries and cannibalism. The welfare consequences of beak trimming are discussed in Section 3.7.1 in relation to laying hens. Prohibition of beak trimming is classified as a key criterion in the analysis.

Turkeys are also bred for fast growth, efficient feed conversion and large breast meat yield and suffer from similar problems to broiler chickens. Like broiler chickens, turkeys suffer from a number of cardiovascular disorders that can cause sudden death and are responsible for a major portion of flock mortality (Julian, 2005). Lameness is a serious welfare issue in growing turkeys (*ibid.*) and painful degeneration of the hips and other joints can occur in male breeding turkeys (Duncan *et al*, 1991).

Male turkeys are now too heavy and broad-breasted to mate naturally. Artificial insemination is therefore standard practice. The 1995 report of the Banner Committee on the ethical implications of emerging technologies in the breeding of farm animals concluded: *“The breeding of birds who are physically incapable of engaging in behaviour which is natural to them is fundamentally objectionable”*. Diet shifting is commonly used to restrict growth rate in breeding turkeys to reduce leg problems and maintain reproductive fitness; the heaviest breeds are however likely to be subjected to quantitative feed restriction. The prohibition of fast-growing breeds is therefore considered a key criterion in the analysis and prohibition of feed restriction is included as a criterion in the scoring of breeding bird welfare.

3.6.2 Analysis of results for turkeys

The criteria and key criteria (highlighted in with an asterisk) used in the analysis of assurance scheme standards for turkeys and the scores achieved by each of the schemes are shown in **Table 3.6**. The full results tables and scoring categories for turkeys are given in **Appendix 6**.

Table 3.6: Scoring of assurance scheme standards for turkeys

Key criteria are highlighted with an asterisk. Criteria are grouped into five sets. Totals for each set of criteria are converted to scores out of 20, which are totalled to give an overall score out of 100 for each scheme. Scores of ≥ 50 , ≥ 70 and ≥ 90 are classified as bronze, silver and gold systems respectively.

CRITERIA	QBT minimum	QBT free-range	RSPCA minimum	RSPCA free-range	SOPA	SA	Score from
Prohibition of cages	5	5	5	5	5	5	/5
Indoor stocking density*	2	8	8	8	8	10	/10
Prohibition of thinning	0	1	4	4	4	4	/5
Environmental conditions	2	3	5	5	3	3	/5
Provision of litter & indoor enrichment*	2	2	8	8	8	6	/10
Lighting	1	4	3	5	5	5	/5
Free-range access*	0	8	0	8	10	10	/10
Outdoor stocking density	0	3	0	3	5	5	/5
Provision of cover & protection from predators	0	2	0	4	4	4	/5
Flock size	0	0	1	1	3	3	/5
Total for environment criteria	12	36	34	51	55	55	/65
Score for environment	4	11	10	16	17	17	/20
Farming system classification	-	Bronze	Bronze	Silver	Silver	Silver	-
Prohibition of beak trimming*	0	0	2	0	10	10	/10
Prohibition of GM/cloned animals & offspring	0	0	0	0	4	4	/5
Duration of feed withdrawal	3	3	4	4	0	3	/5
Monitoring of health and welfare by producers*	4	4	8	8	2	6	/10
Total for husbandry criteria	7	7	14	12	16	23	/30
Score for husbandry	5	5	9	8	11	15	/20
Catching/handling*	6	6	8	8	0	0	/10
Training of stockpeople	3	3	3	3	2	2	/5
Frequency of checks	4	4	5	5	5	5	/5
Transport duration*	6	6	8	8	8	8	/10
Humane slaughter methods*	4	4	6	6	2	2	/10
Specifications & monitoring of slaughter*	6	6	10	10	2	6	/10
Promotion of high welfare standards during catching, transport & slaughter	4	4	4	4	2	3	/5
Total for stockmanship, handling, transport & slaughter criteria	33	33	44	44	21	26	/55
Score for stockmanship, handling, transport & slaughter	12	12	16	16	8	9	/20
Breeds permitted*	0	0	2	2	6	8	/10
Welfare of breeding birds	2	2	0	0	0	4	/5
Total for genetics & breeding criteria	2	2	2	2	6	12	/15
Score for genetics & breeding	3	3	3	3	8	16	/20
Frequency of inspections by certifying body	4	4	4	4	4	4	/5
Targeted unannounced spot-checks	1	1	5	5	1	3	/5
Monitoring of welfare outcomes by the scheme*	0	0	6	6	0	6	/10
Measures to address non-compliance	5	5	5	5	5	5	/5
Total for auditing criteria	10	10	20	20	10	18	/25
Score for auditing	8	8	16	16	8	14	/20
OVERALL WELFARE SCORE	32	39	54	59	52	71	/100
Overall scheme classification	-	-	Bronze	Bronze	Bronze	Silver	

Overall, the **SA** scheme achieves the highest score, with 71 points out of a possible 100, giving a silver scheme classification. Compared with standard industry practice, this scheme offers many **welfare advantages**, including:

- Much lower stocking densities (including a limit on the number, as well as weight, of birds per square metre to prevent birds being overstocked and then thinned);
- Provision of perches;
- Free-range access;
- Provision of overhead cover on the range;
- Smaller flock sizes;
- Prohibition of beak trimming;
- A requirement for on-farm monitoring of health and welfare by producers;
- A restriction on transport duration to eight hours;
- Prohibition of carbon dioxide stunning;
- A requirement to use slower-growing breeds (otherwise a minimum slaughter age of 140 days applies to discourage the use of fast-growing breeds);
- Prohibition of feed restriction of breeding birds;
- A system of monitoring welfare outcomes by the assurance scheme.

However, there is still room for improvement. The **SA** scheme achieves a silver classification for the farming system but is only one point away from a gold system classification and a number of improvements in certain areas would allow this scheme to achieve a gold classification for both the farming system and the scheme as a whole. **Key areas for improvement** include:

- Provision of additional indoor enrichment such as straw bales, roughage and pecking objects;
- Introducing specific requirements for catching methods to be used at depopulation;
- Introducing targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Prohibition of shackling of live birds and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Strengthening of the requirement to use slower-growing breeds through complete prohibition of fast-growing breeds.

The **RSPCA** scheme achieves 59 points for its **free-range standards** and 54 points for its

minimum standards. The **free-range standards** score more highly on the environment criteria, achieving a silver farming system classification. The **minimum standards** achieve a bronze farming system classification. Compared with standard industry practice, the **RSPCA standards** offer a number of **welfare advantages**, including:

- Lower stocking densities and prohibition of thinning;
- Provision of indoor enrichment, including perches, straw bales and pecking objects;
- Restrictions on beak trimming in certain types of housing system;
- A requirement for on-farm monitoring of health and welfare by producers including targets for key welfare indicators;
- A requirement for training of stockpeople;
- A restriction on transport duration to six hours;
- Encouragement of the use of controlled atmosphere stunning systems and prohibition of carbon dioxide at concentrations above 30%;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- Work is currently underway to develop a system of monitoring welfare outcomes by the assurance scheme.

In addition, the **RSPCA free-range standards** require:

- Free-range access;
- Provision of overhead cover on the range.

Key areas for improvement of the **RSPCA** scheme include:

- A reduction in flock sizes;
- Complete prohibition of beak trimming;
- Prohibition of shackling of live birds and complete prohibition of carbon dioxide stunning and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Introducing a requirement to use at least moderately slower-growing breeds;
- Introduction of welfare standards for breeding birds.

The **SOPA** scheme scores 52 points, giving a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Lower stocking densities (specified as a limit on the number of birds per square metre which will prevent birds being overstocked and then thinned);
- Provision of indoor enrichment including perches and roughage;
- Free-range access;
- Provision of overhead cover on the range;
- Smaller flock sizes;
- Prohibition of beak trimming;
- A restriction on transport duration to eight hours;
- Prohibition of carbon dioxide stunning;
- A requirement to use slower-growing breeds (otherwise a minimum slaughter age of 140 days applies to discourage the use of fast-growing breeds).

The **SOPA** scheme achieves a silver farming system classification and is only a single point away from a gold system classification. However, the scheme overall is let down by a number of features that could be rectified to achieve a gold classification for both the system and the scheme as a whole. **Key areas for improvement** include:

- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Prohibition of shackling of live birds and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Strengthening of the requirement to use slower-growing breeds through complete prohibition of fast-growing breeds;
- Introduction of welfare standards for breeding birds;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

The **QBT** scheme scores 39 points for its **free-range standards** and 32 points for its **minimum standards**. Compared with standard industry practice, the **QBT free-range standards** offer a number of **welfare advantages**, including:

- Lower stocking densities;
- Free-range access;
- A requirement for training of stockpeople;
- Encouragement of the use of controlled

atmosphere stunning systems and prohibition of carbon dioxide at concentrations above 30%.

The latter two also apply to the **QBT minimum standards**.

The **QBT free-range standards** achieve a bronze classification for the farming system but the scheme is let down by a number of features that could be rectified in order to achieve a bronze classification for the scheme as a whole.

Key areas for improvement include:

- Prohibition of thinning;
- Provision of indoor enrichment, including perches, straw bales, roughage and pecking objects;
- Strengthening of the requirements for overhead cover on the range;
- A reduction in flock sizes;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- A reduction in transport duration (to eight hours or less);
- Prohibition of shackling of live birds and complete prohibition of carbon dioxide stunning and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Introduction of a requirement to use breeds that are at least moderately slower-growing;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

Key areas for improvement of the **QBT minimum standards** include:

- A reduction in stocking density;
- Strengthening of the recommendation on provision of perches, straw bales and pecking objects to make this a firm requirement;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- A reduction in transport duration (to eight hours or less);
- Prohibition of shackling of live birds and complete prohibition of carbon dioxide stunning and replacement with controlled atmosphere stunning using non-aversive gas mixtures;

- Introduction of a requirement to use breeds that are moderately slower-growing. Failing this, at least the introduction of targets for the levels of leg disorders with a requirement to change the breed if these levels are exceeded;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

SUMMARY OF THE RESULTS FOR TURKEY SCHEMES:

1st	Soil Association (SA) 71 points (Silver farming system; Silver scheme)
2nd	RSPCA Freedom Food free-range (RSPCA free-range) 59 points (Silver farming system; Bronze scheme)
3rd	RSPCA Freedom Food minimum (RSPCA minimum) 54 points (Bronze farming system; Bronze scheme)
4th	Scottish Organic Producers Association (SOPA) 52 points (Silver farming system; Bronze scheme)
5th	Quality British Turkey (Red Tractor) free-range (QBT free-range) 39 points (Bronze farming system)
6th	Quality British Turkey (Red Tractor) minimum (QBT minimum) 32 points

3.7 LAYING HENS

3.7.1 Summary of major welfare issues & selection of key criteria for laying hens

There are over 30 million laying hens in the UK laying flock. Around half of laying hens in the UK are currently housed in cages. Cage systems have low welfare potential and the prohibition of cages is classified as a key criterion in the analysis. Traditionally, conventional battery cages provided each hen with just 550 cm² of floor space, an area less than an A4 sheet of typing paper. Hens were unable to move about properly, stretch, flap their wings, or even turn around without difficulty, and were prevented from carrying out most normal patterns of behaviour, including foraging, perching, dustbathing and laying their eggs in a nest. Conventional battery cages are prohibited across the EU from 2012. However, 'enriched' cages continue to be permitted. These cages contain a nest, low perches and a small amount of litter material but still provide insufficient space and height and fail

to meet many of the behavioural needs of hens (Compassion in World Farming, 2007a).

Hens are highly motivated to lay their eggs in a nest (Cooper and Appleby, 2003), to forage even when provided with adequate food (Cooper and Albertosa, 2003), to roost on elevated perches at night (*Ibid.*) and to dustbathe (Lindberg and Nicol, 1997). Provision of adequate opportunities to carry out these important natural behaviours is therefore vital for a system to have high welfare potential. Adequate space is also essential. Any space allowance of less than about 5000 cm² (which equals the area of about eight sheets of A4 paper) per hen imposes at least some constraint on free expression of behaviour (Savory *et al*, 2006). Only systems with outdoor access provide space in excess of this amount. Range use is increased by the presence of trees and/or hedges (Nicol *et al*, 2003). It is therefore important that standards insist on the provision of overhead cover to ensure birds are able to make full use of the available area. Provision of adequate nesting facilities, provision of litter material, elevated perches and additional enrichment, adequate space allowance, and free-range access, are all classified as key criteria in the analysis.

Hens would naturally live in small groups with a stable hierarchy and they show a preference for a group of 5 hens over a group of 120, provided that the small group is given adequate space (Lindberg and Nicol, 1996). Whilst it may not be considered practical to manage birds in such small groups under commercial conditions, it is important to allow the development of social groups within the flock by providing partitions. In very large flocks it is difficult to provide adequate individual attention to ensure good welfare.

Hens are usually beak trimmed to reduce the risk of welfare problems caused by feather pecking and cannibalism. The consequences of beak trimming for welfare include trauma during the procedure, pain due to tissue damage and nerve injury, loss of normal function due to reduced ability to sense materials with the beak, and loss of integrity of a living animal (Compassion in World Farming, 2009). Prohibition of beak trimming is a key criterion in the analysis.

The causes of feather pecking are multi-factorial, however, evidence suggests that feather pecking is redirected ground pecking behaviour associated with foraging (Blokhuys, 1986; Huber-Eicher and Wechsler, 1997; Ramadan and von Borell, 2008) and recent research indicates that severe feather pecking in particular derives from frustrated motivation to forage (Dixon *et al*, 2008). Feeding high-fibre, low-energy diets or roughage reduces feather pecking (van Krimpen *et al*, 2005). Insoluble fibre (non-starch polysaccharides and lignin) affects gut functions and modulates nutrient digestion and there are indications that diets high in insoluble fibre are preventive of cannibalism outbreaks in laying hens (Hetland *et al*, 2004). Therefore, in addition to providing opportunities for foraging, it is important to ensure adequate fibre in the diet; both criteria are therefore included in the scoring.

In some countries, hens are deprived of feed, and sometimes also water, to induce them to moult and hasten the start of another cycle of egg laying. It is usual for hens in the UK to be slaughtered after a single cycle of egg laying and Council Directive 98/58/EC requires that *“all animals must have access to feed at intervals appropriate to their physiological needs.”* This would appear to rule out the use of forced moulting in the UK. However, prohibition of forced moulting is nonetheless included as a key criterion in the analysis to reward schemes for ensuring that this unacceptable practice cannot be used.

Laying hens have been selectively bred to produce very high numbers of eggs – a typical commercial hen now lays around 300 eggs in a year (Defra *et al*, 2008). Genetic selection of commercial layers for increased egg production has resulted in much weaker bones compared with traditional breeds (Budgell and Silversides, 2004). This is because egg shell quality is maintained in genetically selected lines at the expense of bone strength and density (Hocking *et al*, 2003).

Bone fractures can be a major welfare problem for laying hens in all housing systems. The lack of opportunity for exercise in cage systems further contributes to weakened bones and many birds suffer bone fractures when they are removed from cages for slaughter (Gregory

et al, 1990). Although the greater freedom of movement in non-cage systems improves bone strength, it can also create more opportunities for accidents, which can result in many birds having old healed fractures by the end of lay (*Ibid.*). Recent data suggests that the problem of bone fractures may be getting worse, with various studies from cages, floor housing, aviary and free-range systems reporting incidences ranging from 50% to almost 90% (Friere *et al*, 2003; Wilkins *et al*, 2004; Rodenburg *et al*, 2006).

Strains of hens also differ in their propensity to engage in feather pecking (McAdie and Keeling, 2000). Only breeds that are not associated with increased levels of health or welfare problems should be permitted and schemes should require that key health and welfare parameters, such as the level of bone fractures and feather damage, are monitored and demonstrated to be within acceptable limits.

Careful handling is essential to minimise the risk of bone fractures in laying hens and they should ideally be caught and carried individually. Catching and handling methods are classified as a key criterion in the analysis.

Another consequence of breeding for specialised egg-laying strains is that the male chicks are not considered commercially useful. The males do not lay eggs and only fast-growing, heavy-muscled chickens are considered suitable for meat production. As a result, the chicks are sexed at hatching and the males are killed. Ideally, dual-purpose breeds should be used that are suitable for both laying eggs and rearing for meat. These would benefit from increased bone strength and the male birds could be raised for meat, thus avoiding the culling of male chicks as an unwanted by-product.

3.7.2 Analysis of results for laying hens

The criteria and key criteria (highlighted with an asterix) used in the analysis of assurance scheme standards for laying hens and the scores achieved by each of the schemes are shown in **Table 3.7**. The full results tables and scoring categories for laying hens are given in **Appendix 7**.

Table 3.7: Scoring of assurance scheme standards for laying hens

Key criteria are highlighted with an asterix. Criteria are grouped into five sets. Totals for each set of criteria are converted to scores out of 20, which are totalled to give an overall score out of 100 for each scheme. Scores of ≥50, ≥70 and ≥90 are classified as bronze, silver and gold systems respectively.

CRITERIA	Lion minimum	Lion free-range	RSPCA minimum	RSPCA free-range	SOPA	SA	Score from
Prohibition of cages*	0	10	10	10	10	10	/10
Indoor stocking density*	2	8	8	8	10	10	/10
Environmental conditions	2	3	5	5	3	3	/5
Provision of perches, litter & indoor enrichment*	2	4	6	6	8	8	/10
Provision of nests*	2	8	8	8	10	10	/10
Lighting	1	3	2	4	5	5	/5
Free range access*	0	10	0	10	10	10	/10
Outdoor stocking density	0	3	0	4	5	5	/5
Provision of cover & protection from predators	0	2	0	4	4	4	/5
Flock size	2	0	0	0	3	3	/5
Total for environment criteria	11	51	39	59	68	68	/75
Score for environment	3	14	10	16	18	18	/20
Farming system classification	-	Silver	Bronze	Silver	Gold	Gold	-
Prohibition of beak trimming*	0	0	6	6	10	8	/10
Prohibition of GM/cloned animals & offspring	0	0	0	0	4	4	/5
Provision of roughage & insoluble grit	0	3	1	4	5	4	/5
Prohibition of forced moulting*	10	10	10	10	10	10	/10
Duration of feed withdrawal	3	3	3	3	0	3	/5
Monitoring of health and welfare by producers*	2	2	8	8	2	6	/10
Total for husbandry criteria	15	18	28	31	31	35	/45
Score for husbandry	7	8	12	14	14	16	/20
Catching/handling*	6	6	6	6	6	6	/10
Training of stockpeople	2	2	3	3	2	2	/5
Frequency of checks	3	3	5	5	5	5	/5
Transport duration*	0	0	6	6	8	8	/10
Humane slaughter methods*	0	0	4	4	2	2	/10
Specifications & monitoring of slaughter*	0	0	8	8	2	6	/10
Promotion of high welfare standards during catching, transport & slaughter	1	1	4	4	2	3	/5
Total for stockmanship, handling, transport & slaughter criteria	12	12	36	36	27	32	/55
Score for stockmanship, handling, transport & slaughter	4	4	13	13	10	12	/20
Breeds permitted*	0	0	2	2	6	6	/10
Welfare of breeding birds	1	1	0	0	0	4	/5
Prohibition of killing of male chicks	0	0	0	0	0	0	/5
Total for genetics & breeding criteria	1	1	2	2	6	10	/20
Score for genetics & breeding	1	1	2	2	6	10	/20
Frequency of inspections by certifying body	2	2	4	4	4	4	/5
Targeted unannounced spot-checks	1	1	5	5	1	3	/5
Monitoring of welfare outcomes by the scheme*	0	0	8	8	0	6	/10
Measures to address non-compliance	5	5	5	5	5	5	/5
Total for auditing criteria	8	8	22	22	10	18	/25
Score for auditing	6	6	18	18	8	14	/20
OVERALL WELFARE SCORE	21	33	55	63	56	70	/100
Overall scheme classification	-	-	Bronze	Bronze	Bronze	Silver	

Overall, the **SA** scheme achieves the highest score, with 70 points out of a possible 100, giving a silver scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of cages;
- Significantly higher space allowances;
- Provision of 18 cm of perching space per bird and stipulation that raised slatted flooring cannot count towards perching space;
- Free-range access;
- Provision of overhead cover on the range;
- Smaller flock sizes and the provision of partitions to allow the formation of social groups;
- Restrictions on the use of beak trimming;
- A restriction on transport duration to eight hours;
- Prohibition of carbon dioxide stunning;
- A system of monitoring welfare outcomes by the assurance scheme.

However, there is still room for improvement. The **SA** scheme achieves a gold classification for the farming system but the scheme overall is let down by a number of features that could be rectified to achieve a gold classification for the scheme as a whole. **Key areas for improvement** include:

- Complete prohibition of beak trimming;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Prohibition of shackling of live birds and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Strengthening of the requirements on breed: This could be achieved by requiring that the level of bone fractures is monitored and demonstrated to be within acceptable limits and/or that dual-purpose breeds are used with the males reared for meat.

The **RSPCA free-range standards** achieve the next highest score, with 63 points, giving a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of cages;
- Free-range access;
- Provision of overhead cover on the range;
- A requirement for on-farm monitoring of health and welfare by producers;
- A restriction on transport duration to eight hours;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- A system of monitoring welfare outcomes by the assurance scheme.

The **RSPCA free-range standards** achieve a silver classification for the farming system but the scheme overall is let down in particular by a very low score of two out of 20 for genetics and breeding. This is partly because the welfare of breeding birds is not covered by the standards and also because of a lack of any requirement to use breeds that do not suffer from unacceptably high levels of bone fractures. Other **key areas for improvement** include:

- Stipulation that raised slatted flooring cannot count towards perching space, in line with the requirements of EU Council Directive 1999/74/EC;
- A reduction in flock sizes;
- Prohibition of beak trimming (the scheme is aiming towards this and plans to phase out beak trimming within the next five years);
- Prohibition of shackling of live birds and complete prohibition of carbon dioxide stunning and replacement with controlled atmosphere stunning using non-aversive gas mixtures.

The **SOPA** scheme achieved 56 points, giving a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**:

- Prohibition of cages;
- Significantly higher space allowances;
- Provision of 18 cm of perching space per bird;
- Free-range access;
- Provision of overhead cover on the range;
- Smaller flock sizes and the provision of partitions to allow the formation of social groups;
- Prohibition of beak trimming;
- A restriction on transport duration to eight hours;
- Prohibition of carbon dioxide stunning.

The **SOPA** scheme achieves a gold farming system classification but the scheme overall is let down by a number of features that could be rectified to achieve a gold classification for the scheme as a whole. **Key areas for improvement** include:

- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Prohibition of shackling of live birds and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Strengthening of the requirements on breed: This could be achieved by requiring that the level of bone fractures is monitored and demonstrated to be within acceptable limits and/or that dual-purpose breeds are used with the males reared for meat;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

The **RSPCA minimum standards** score 55 points, giving a bronze scheme classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Prohibition of cages;
- A requirement for on-farm monitoring of health and welfare by producers;
- A restriction on transport duration to eight hours;
- Specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- A system of monitoring welfare outcomes by the assurance scheme.

The bronze scheme classification for the **RSPCA minimum standards** is in line with their bronze farming system classification. **Key areas for improvement** include:

- Stipulation that raised slatted flooring cannot count towards perching space, in line with the requirements of EU Council Directive 1999/74/EC;
- A reduction in flock sizes;
- Prohibition of beak trimming (the scheme is aiming towards this and plans to phase out beak trimming within the next five years);

- Prohibition of shackling of live birds and complete prohibition of carbon dioxide stunning and replacement with controlled atmosphere stunning using non-aversive gas mixtures;
- Introduction of a requirement to use breeds that do not suffer from unacceptably high levels of bone fractures.

The **Lion Code** scores 33 points for the **free-range standards** and 21 points for the **minimum standards**. Compared with standard industry practice, the **Lion Code free-range standards** offer certain **welfare advantages**, including:

- Prohibition of cages;
- Free-range access.

These benefits contribute to the silver farming system classification for these standards. However, the scheme overall is let down by a number of features that could be rectified to achieve a silver classification for the scheme as a whole. **Key areas for improvement** include:

- Stipulation that raised slatted flooring cannot count towards perching space, in line with the requirements of EU Council Directive 1999/74/EC;
- Provision of adequate overhead cover on the range;
- A reduction in flock sizes and the provision of partitions to allow the formation of social groups;
- Prohibition of beak trimming;
- Introducing a requirement for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Introducing a limit on transport duration (to eight hours or less);
- Introducing standards for the slaughter of end-of-lay hens;
- Development of a system of monitoring welfare outcomes.

The **Lion Code minimum standards** score very poorly, with just three points out of 20 for the environment criteria and no more than seven points out of 20 on any section. The **major issue for improvement** of this scheme

is the prohibition of cages (conventional cages are prohibited by legislation from 2012 but enriched cages continue to be allowed). Other **key areas for improvement** include:

- Prohibition of beak trimming;
- Introducing a limit on transport duration (to eight hours or less)
- introducing standards for the slaughter of end-of-lay hens.

SUMMARY OF THE RESULTS FOR LAYING HEN SCHEMES:

1st	Soil Association (SA) 70 points (Gold farming system; Silver scheme)
2nd	RSPCA Freedom Food free-range (RSPCA free-range) 63 points (Silver farming system; Bronze scheme)
3rd	Scottish Organic Producers Association (SOPA) 56 points (Gold farming system; Bronze scheme)
4th	RSPCA Freedom Food minimum standards (RSPCA minimum) 55 points (Bronze farming system; Bronze scheme)
5th	Lion Egg Code of Practice free-range (Lion free-range) 33 points (Silver farming system)
6th	Lion Egg Code of Practice minimum standards (Lion minimum) 21 points

3.8 SALMON

3.8.1 Summary of major welfare issues & selection of key criteria for salmon

Intensive fish farming practices often cause stress and poor welfare. The behaviour of farmed fish is severely restricted. Species like salmon would naturally swim great distances at sea. Confined in cages, farmed fish are unable to escape from dangers such as poor water quality or attack by predators (including other fish). Mortality rates of farmed fish are often very high compared with other farmed animals. For example, mortality of salmon reared in sea cages in Scotland is around 21% (Compassion in World Farming, 2007b). Such high mortality rates would not be considered acceptable in other branches of farming.

Farmed fish are often stocked at very high densities, which can have a detrimental

impact on their health and welfare, especially for species that do not naturally live in close-schooling shoals. High densities can lead to increased susceptibility to disease, increased incidence of physical injuries, poor body condition, increased stress, poor water quality and increased aggression (*Ibid.*). The provision of environmental enrichment (e.g. seaweeds) is likely to be beneficial in providing opportunities for hiding and escape from other fish and providing a degree of environmental complexity. Stocking density, standards for water quality and provision of enrichment are all considered as key criteria in the analysis.

Many farm activities, including stripping of eggs and semen, vaccination, tagging and marking, grading and splitting into groups, loading for transport, and movement to the slaughter point, involve handling the fish and/or moving them around the farm. Handling is stressful, particularly if it involves removal from the water. It can result in scale loss, injuries to eyes, fins and skin, and muscle bruising (*Ibid.*). Fish are sometimes crowded to aid handling, for example during grading, counting, transport and slaughter. Crowding is undertaken in order to make it easier to access the fish; it involves gathering the fish into one section of the enclosure and leads to extreme stocking densities. Crowding is stressful and can lead to damaged scales, skin ulceration, eye and snout damage and bruising (Wall, 2000).

Fish grow at varying rates. In natural conditions, smaller fish can avoid aggression from larger ones by moving away but escape is difficult in the confined conditions of intensive farming. Larger fish may bully smaller ones and prevent them from feeding, or even cannibalise them. In order to minimise this, fish are periodically graded into different sizes. Fish may also be graded before slaughter to remove those not yet ready for slaughter. Grading is a stressful procedure and can lead to physical injury to the fish. The quality of handling and grading systems, limits on the length of time fish can be kept out of water whilst conscious, and limits on the frequency and duration of crowding, are all considered as key criteria in the analysis.

Farmed salmon are often starved for several days, sometimes for two weeks or more, before slaughter, in order to empty the gut. Such prolonged periods of starvation are unacceptable and unnecessary. FAWC (1996)

recommends that salmon should not normally be deprived of feed for more than 72 hours. Duration of feed withdrawal is classified as a key criterion.

A range of slaughter methods may be used in fish farming, some of which cause great suffering and involve the fish taking a long time to lose consciousness. Fish may be killed by gill cutting without prior stunning or they may be left to asphyxiate in air, or on ice, which prolongs their suffering. Carbon dioxide may be used to induce unconsciousness prior to slaughter but the AHAW Panel states: *“not only was it judged that exposure to the gas causes a strong adverse reaction but it does not reliably result in unconsciousness, thus salmon may be bled or eviscerated when conscious”* (AHAW, 2009e). Slaughter methods should result in immediate loss of consciousness or the induction of unconsciousness without distress, and the fish should remain unconscious until death. Humane methods of stunning fish prior to slaughter include percussive stunning and electrical stunning. The AHAW Panel concludes: *“percussive methods and electrical stunning were assessed to reliably cause unconsciousness in the vast majority of salmon”* (*Ibid.*). The prohibition of inhumane slaughter methods is considered as a key criterion in the analysis.

Biotechnology is often used to produce fish which are all female (known as ‘sex-reversal’) and also to produce fish which are sterile (‘triploidy’). This is because flesh quality can be reduced when the fish reach sexual maturity. In several species the females mature later than males, enabling them to be grown to greater weights, and sterile fish will not become sexually mature. Triploid salmon suffer from a higher incidence of deformities of the mouth, gills and spine, a reduced ability to cope with low dissolved oxygen levels and high temperatures, greater susceptibility to handling and grading stress, and increased vulnerability to infection and disease compared with normal (‘diploid’) salmon (Webster, 2005b). Prohibition of triploid fish is a key criterion in the analysis.

Growth-enhanced transgenic Atlantic salmon have been produced that can grow three to six times faster than ordinary salmon (Fletcher *et al*, 2004). Genetic engineering can lead to serious health and welfare problems in fish, including increased susceptibility to stress and disease and serious deformities which can

result in feeding and breathing difficulties (Compassion in World Farming, 2007b). Genetically-engineered salmon are not yet in commercial use in the UK but prohibition of genetically engineered fish is nonetheless considered as a key criterion in the analysis because it is important to ensure that such fish are not used in the future.

3.8.2 Analysis of results for salmon

The criteria and key criteria (highlighted with an asterisk) used in the analysis of assurance scheme standards for salmon and the scores achieved by each of the schemes are shown in **Table 3.8**. The full results tables and scoring categories for salmon are given in **Appendix 8**.

Table 3.8: Scoring of assurance scheme standards for salmon

Key criteria are highlighted with an asterisk. Criteria are grouped into five sets. Totals for each set of criteria are converted to scores out of 20, which are totalled to give an overall score out of 100 for each scheme. Scores of ≥ 50 , ≥ 70 and ≥ 90 are classified as bronze, silver and gold systems respectively.

CRITERIA	CoGP	RSPCA	SA	Score from
Stocking density at freshwater parr stage*	0	4	10	/10
Stocking density in saltwater cages/pens*	0	6	10	/10
High standards of water quality*	2	8	10	/10
Provision of environmental enrichment*	0	0	0	/10
Lighting	0	0	5	/5
Provision of protection from predators	5	5	5	/5
Prohibition of killing of predators	1	3	5	/5
Grouping	0	0	5	/5
Prohibition of use of cleaner fish to control sea lice	0	5	1	/5
Total for environment criteria	8	31	51	/65
Score for environment	2	10	16	/20
Farming system classification	-	Bronze	Silver	-
Prohibition of mutilations & tagging*	4	10	10	/10
Prohibition of GM/cloned fish & offspring*	6	8	8	/10
Prohibition of stripping of conscious broodstock*	10	0	10	/10
Feeding methods	0	5	5	/5
Prohibition of high energy (high oil content) diets	0	0	5	/5
Duration of feed withdrawal*	0	10	8	/10
Humane handling & sustainable sourcing of feed fish	1	0	3	/5
Monitoring of health and welfare by producers*	6	8	2	/10
Total for husbandry criteria	27	41	51	/65
Score for husbandry	8	13	16	/20
Handling and grading systems*	4	4	10	/10
Limit on period of removal from water*	0	8	8	/10
Limit on period of crowding*	0	10	10	/10
Training of stockpeople	3	3	3	/5
Frequency of checks	4	4	4	/5
Transport duration & conditions*	2	2	6	/10
Humane slaughter methods*	10	10	10	/10
Specifications & monitoring of slaughter*	4	8	8	/10
Training of drivers & slaughter workers	3	4	3	/5
Total for stockmanship, handling, transport & slaughter criteria	30	53	62	/75
Score for stockmanship, handling, transport & slaughter	8	14	17	/20
Prohibition of triploid stock*	0	0	10	/10
Prohibition of all-female stock	0	0	5	/5
Total for genetics & breeding criteria	0	0	15	/15
Score for genetics & breeding	0	0	20	/20
Frequency of inspections by certifying body	4	4	4	/5
Targeted unannounced spot-checks	2	5	3	/5
Monitoring of welfare outcomes by the scheme*	2	4	0	/10
Measures to address non-compliance	5	5	5	/5
Total for auditing criteria	13	18	12	/25
Score for auditing	10	14	10	/20
OVERALL WELFARE SCORE	28	51	79	/100
Overall scheme classification	-	Bronze	Silver	-

Overall, the **SA** scheme achieves the highest score, with 79 points out of a possible 100, giving a silver scheme classification, which is in line with its silver farming system classification. Compared with standard industry practice, this scheme offers many **welfare advantages**, including:

- Much lower stocking densities;
- More stringent water quality standards;
- Prohibition of the killing of predators;
- A requirement to keep fish in groups of similar-sized stock to minimise aggression;
- Prohibition of mutilations;
- A requirement to anaesthetise or slaughter broodstock prior to stripping;
- A requirement to distribute feed in such a way as to minimise stress and to monitor feeding behaviour;
- Prohibition of high energy diets;
- A limit of 72 hours on the length of time fish may be starved prior to slaughter;
- A requirement for a sea lice monitoring strategy;
- Stringent standards for handling fish, including a limit of 15 seconds on the length of time fish may be kept out of water whilst conscious and limits on the frequency and duration of crowding;
- A requirement for training of stockpeople;
- Stringent limits on transport duration;
- Prohibition of inhumane slaughter methods and specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- Prohibition of the use of genetically engineered, triploid and all-female stock.

Key areas for improvement of the **SA** scheme include:

- Provision of environmental enrichment;
- Prohibition of the use of cleaner fish such as wrasse;
- Introducing more stringent requirements for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Work to develop sources of feed fish that are not only from sustainable stocks but are also caught, handled and slaughtered using more humane methods.

The **RSPCA** scheme scores 51 points, giving a bronze scheme classification, which is in line with its bronze farming system classification. Compared with standard industry practice, this scheme offers a number of **welfare advantages**, including:

- Lower stocking densities;
- Specified water quality standards;
- Complete prohibition of the killing of predators;
- Prohibition of the use of cleaner fish such as wrasse;
- Prohibition of mutilations;
- A requirement to distribute feed in such a way as to minimise competition and to monitor feeding behaviour;
- A limit of 72 hours on the length of time fish may be starved prior to slaughter;
- A requirement for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators and a sea lice monitoring strategy;
- Improved standards for handling fish, including a limit of 15 seconds on the length of time fish may be kept out of water whilst conscious and limits on the frequency and duration of crowding;
- A requirement for training of stockpeople;
- Prohibition of inhumane slaughter methods and specifications and monitoring to ensure effective pre-slaughter stunning and unconsciousness until death;
- Prohibition of genetically engineered stock.

Key areas for improvement of the **RSPCA** scheme include:

- Provision of environmental enrichment;
- Introducing a requirement for broodstock to be anaesthetised or slaughtered prior to stripping;
- A reduction in transport duration;
- Prohibition of the use of triploid stock.

The **CoGP** standards score 28 points. These standards offer few welfare benefits compared with standard industry practice. **Good points** include:

- A requirement to anaesthetise or slaughter broodstock prior to stripping;
- A requirement for on-farm monitoring of health and welfare by producers, including a sea lice monitoring strategy;

- A requirement for training of stockpeople;
- Prohibition of inhumane slaughter methods;
- Prohibition of the use of genetically modified stock.

Key areas for improvement of the **CoGP** standards include:

- A reduction in stocking densities;
- Specified standards for water quality;
- Prohibition of the killing of predators;
- Prohibition of the use of cleaner fish such as wrasse;
- Strengthening of the restrictions on mutilations and marking methods to prohibit all methods that cause distress or injury;
- Limiting the length of time fish may be starved prior to slaughter to 72 hours;
- Introducing targets for key welfare indicators;
- Prohibition of triploid stock.

SUMMARY OF THE RESULTS FOR SALMON SCHEMES:

1st	Soil Association (SA) 79 points (Silver farming system; Silver scheme)
2nd	RSPCA Freedom Food 51 points (Bronze farming system; Bronze scheme)
3rd	Code of Good Practice for Scottish Finfish Aquaculture (CoGP) 28 points

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Soil Association (SA)

The Soil Association achieved very good scores and first place out of the schemes analysed for all of the species covered by the analysis. The farming system was rated as gold for pigs and laying hens and silver for all other species. The scheme overall was rated as silver for all species, except for sheep, for which it was rated as bronze. The SA standards offer many welfare advantages relative to standard industry practice for all species.

In general, the main benefits of the SA scheme include:

- Prohibition of confinement systems;
- Higher space allowances;
- Prohibition of fully-slatted floors;
- Provision of bedding and/or environmental enrichment;
- Free-range access;
- Lower outdoor stocking densities;
- Provision of shelter and shade;
- Smaller flock sizes for poultry;
- Prohibition of many common mutilations;
- Prohibition of genetically engineered and cloned animals, and of triploid and all-female salmon stock;
- Provision of adequate fibre;
- Restriction of transport duration to eight hours for terrestrial species and six hours for salmon, and prohibition of the live export of young calves and of animals for slaughter;
- Specifications for, and monitoring of, the stunning and slaughter process;
- Requirement to use breeds that do not suffer from an increased incidence of health and welfare problems associated with intensive production;
- A system of monitoring welfare outcomes by the assurance scheme.

The main recommendations for improvement of the SA scheme are as follows:

- Strengthening of the requirements for free-range access: Firstly, to remove the exception that currently applies to one fifth of the life of pigs and beef cattle. Secondly, to ensure that lambs are not born early in the season and sent to slaughter before being turned out to pasture in the spring (e.g. by specifying a minimum proportion of their life that must be spent at pasture);

- Increased space allowances for sheep when housed;
- Strengthening of the requirements regarding mutilations of cattle and sheep: Firstly, introduction of a requirement to use polled breeds of cattle and short-tailed breeds of sheep (or breeds of sheep that are otherwise more resistant to fly strike) or to breed for these characteristics (unless horns and tails are left intact). Secondly, to ensure the use of anaesthetic for all mutilations (disbudding of calves, tail docking of lambs and castration of calves and lambs) for as long as they continue to be permitted (in line with Commission Regulation (EC) No 889/2008, which requires that “adequate anaesthesia and/or analgesia” must be applied);
- Strengthening of the prohibition of genetically engineered and cloned animals to extend this prohibition to the offspring of such animals;
- Strengthening of the requirements for on-farm monitoring of animal health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Prohibition of the use of livestock markets for cattle and sheep;
- Strengthening of the requirements on breed: This could be achieved by the introduction of fixed targets for all scheme members for key health and welfare parameters associated with growth rate/production level, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

4.2 Scottish Organic Producers Association (SOPA)

The Scottish Organic Producers Association achieved very good scores on the environment criteria and out-performed all of the other schemes in terms of the farming system classifications, with a rating of gold for pigs, dairy cattle, sheep, broiler chickens and laying hens, and silver for beef cattle and turkeys. However, the scheme overall did not perform as well as the farming system classifications might suggest, with the scheme rated as silver for pigs and bronze for all other species. A number of issues in other areas of the standards need to be addressed in order to ensure that the high

welfare potential of the systems is fulfilled. Nonetheless, the SOPA standards offer many welfare advantages relative to standard industry practice for all species.

In general, the main benefits of the SOPA scheme include:

- Prohibition of confinement systems;
- Higher space allowances;
- Prohibition of fully-slatted floors;
- Provision of bedding and/or environmental enrichment;
- Free-range access;
- Lower outdoor stocking densities;
- Provision of shelter and shade;
- Smaller flock sizes for poultry;
- Prohibition of many common mutilations;
- Prohibition of genetically engineered and cloned animals;
- Provision of adequate fibre;
- Restriction of transport duration to eight hours;
- Requirement to use breeds that do not suffer from an increased incidence of health and welfare problems association with intensive production.

The main recommendations for improvement of the SOPA scheme are as follows:

- Strengthening of the requirements for free-range access: Firstly, to remove the exception that currently applies to one fifth of the life of pigs and beef cattle. Secondly, to ensure that lambs are not born early in the season and sent to slaughter before being turned out to pasture in the spring (e.g. by specifying a minimum proportion of their life that must be spent at pasture);
- Strengthening of the requirements regarding mutilations of cattle and sheep: Firstly, introduction of a requirement to use polled breeds of cattle and short-tailed breeds of sheep (or breeds of sheep that are otherwise more resistant to fly strike) or to breed for these characteristics (unless horns and tails are left intact). Secondly, to ensure the use of anaesthetic for all mutilations (disbudding of calves, tail docking of lambs and castration of calves and lambs) for as long as they continue to be permitted (in line with Commission Regulation (EC) No 889/2008, which requires that “adequate anaesthesia and/or analgesia” must be applied);
- Strengthening of the prohibition of genetically

- engineered and cloned animals to extend this prohibition to the offspring of such animals;
- Strengthening of the requirements for on-farm monitoring of animal health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Prohibition of the use of livestock markets for cattle and sheep;
- Prohibition of the live export of young animals and animals for slaughter;
- Strengthening of the requirements on breed: This could be achieved by the introduction of fixed targets for all scheme members for key health and welfare parameters associated with growth rate/production level, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management;
- Introduction of standards for breeding poultry;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

4.3 RSPCA Freedom Food

The RSPCA achieved good scores for all species, with a farming system rating of silver for sheep, free-range broiler chickens, free-range turkeys and free-range laying hens, and bronze for pigs, dairy cattle, beef cattle, indoor broiler chickens, indoor turkeys, indoor laying hens and salmon. The scheme overall was rated as bronze for all species. The RSPCA scheme consistently out-performed all of the other schemes in certain areas. These include the requirements for on-farm monitoring of animal health and welfare by producers, including targets for key parameters, the requirements for training of stockpeople, and specifications for, and monitoring of, the stunning and slaughter process. The RSPCA standards offer a number of welfare advantages relative to standard industry practice for all species.

In general, the main benefits of the RSPCA scheme include:

- Prohibition of confinement systems (except for farrowing crates for sows, which are currently permitted for a limited period and will be phased out completely by the end of 2013);
- Higher space allowances;
- Prohibition of fully-slatted floors;
- Provision of bedding and/or environmental enrichment;

- Prohibition of zero-grazing systems for dairy cows and sheep;
- Provision of shelter and shade;
- Restrictions on the use of many common mutilations;
- Requirement for on-farm monitoring of animal health and welfare by producers, including targets for key parameters;
- Requirement for training of stockpeople;
- Restriction of transport duration to eight hours for most species, six hours for turkeys, and 14 hours for salmon, and prohibition of the live export of young calves;
- Prohibition of the use of livestock markets (except for calves);
- Specifications for, and monitoring of, the stunning and slaughter process;
- A system of monitoring welfare outcomes by the assurance scheme.

The main recommendations for improvement of the RSPCA scheme are as follows:

- Prohibition of zero-grazing systems for beef cattle (with an exception for dairy beef if necessary);
- Stipulation that raised slatted flooring cannot count towards perching space for laying hens (in line with the requirements of EU Council Directive 1999/74/EC);
- Prohibition of mutilations of pigs;
- Strengthening of the requirements regarding mutilations of cattle and sheep: Firstly, introduction of a requirement to use polled breeds of cattle and short-tailed breeds of sheep (or breeds of sheep that are otherwise more resistant to fly strike) or to breed for these characteristics (unless horns and tails are left intact). Secondly, to ensure the use of anaesthetic for all mutilations (already required for disbudding of calves but not currently required for tail docking of lambs or castration of calves or lambs) for as long as they continue to be permitted;
- Later weaning ages (minimum of at least four weeks for pigs, seven weeks for lambs and eight weeks for calves);
- Extension of the prohibition of genetically engineered and cloned animals and their offspring to all species;
- Prohibition of the use of livestock markets for calves;
- Prohibition of the live export of animals for slaughter;
- Strengthening of the requirements on breed: This could be achieved by the introduction of fixed targets for all scheme members for

- key health and welfare parameters associated with growth rate/production level, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management;
- Introduction of standards for breeding poultry.

4.4 Quality Meat Scotland (QMS)

The QMS scheme generally scored poorly and did not achieve a rating for the farming system or the scheme overall for any species. The QMS standards offer few welfare benefits compared with standard industry practice and generally only ensure compliance with government welfare codes and minimum legislative standards (the interpretation of which is considered inadequate in some cases).

In general, the main good points of the QMS scheme include:

- Requirement to adhere to government welfare codes;
- Requirement to use local anaesthetic for disbudding of calves;
- Requirement for on-farm monitoring of health and welfare by producers, including improvement targets (for beef cattle and sheep);
- Requirement for training of stockpeople;
- Work is currently underway to develop a system of monitoring welfare outcomes by the assurance scheme.

The main recommendations for improvement of the QMS scheme are as follows:

- Prohibition of farrowing crates and provision of nesting material for all sows;
- Prohibition of the tethering of beef cattle and sheep;
- Increased space allowances for pigs, beef cattle and sheep;
- Prohibition of fully-slatted floors and provision of proper enrichment materials (i.e. complex natural materials) for pigs;
- Prohibition of fully-slatted floors and provision of bedding for beef cattle and sheep;
- Prohibition of zero-grazing systems for beef cattle and sheep (with an exception for dairy beef if necessary);
- Prohibition of mutilations of pigs, or at least stringent restrictions on mutilations and introduction of a requirement to use anaesthetic for tail docking and a requirement to use teeth grinding instead of teeth clipping and to remove only the tip of the teeth

- without exposing the pulp cavity;
- Introduction of a requirement to use anaesthetic for tail docking of lambs and castration of lambs and calves;
- Later weaning ages (minimum of at least four weeks for pigs, seven weeks for lambs and eight weeks for calves);
- Prohibition of the use of genetically modified or cloned animals and their offspring;
- Restriction of transport duration to eight hours;
- Prohibition of the live export of young animals and animals for slaughter;
- Introduction of requirements aimed at avoiding breed-related health and welfare problems: This could be achieved by the introduction of fixed targets for all scheme members for key health and welfare parameters associated with growth rate/production level, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management.

4.5 Assured Food Standards (AFS)

The Assured Food Standards schemes generally scored poorly. The free-range standards for broiler chickens and turkeys achieved a bronze farming system rating but neither these standards, nor any of the other AFS schemes, achieved a rating for the scheme overall for any species. The AFS standards offer few welfare benefits compared with standard industry practice and generally only ensure compliance with minimum legislative standards (the interpretation of which is considered inadequate in some cases).

In general, the main good points of the AFS schemes include:

- Requirement for on-farm monitoring of health and welfare by producers for most species, including targets for broiler chickens, although these are much too low to ensure good welfare;
- Requirement for training of stockpeople for poultry schemes;
- Encouragement of the use of controlled atmosphere stunning and prohibition of carbon dioxide at concentrations above 30% for turkeys.

The main recommendations for improvement of the AFS schemes are as follows:

- Prohibition of farrowing crates and provision of nesting material for all sows;
- Prohibition of the tethering of dairy cattle, beef cattle and sheep;

- Increased space allowances for all species;
- Prohibition of fully-slatted floors and provision of proper enrichment materials (i.e. complex natural materials) for pigs;
- Prohibition of fully-slatted floors and provision of bedding for beef cattle and sheep;
- Prohibition of zero-grazing systems for dairy cattle, beef cattle and sheep (with an exception for dairy beef if necessary);
- Prohibition of mutilations of pigs, or at least stringent restrictions on mutilations and introduction of a requirement to use anaesthetic for tail docking and a requirement to use teeth grinding instead of teeth clipping and to remove only the tip of the teeth without exposing the pulp cavity;
- Introduction of a requirement to use anaesthetic for disbudding of calves, tail docking of lambs and castration of calves and lambs;
- Later weaning ages (minimum of at least four weeks for pigs, seven weeks for lambs and eight weeks for calves);
- Prohibition of the use of genetically modified or cloned animals and their offspring;
- Strengthening of the requirements for on-farm monitoring of animal health and welfare by producers, including targets for key welfare indicators for all species;
- Restriction of transport duration to eight hours;
- Prohibition of the live export of young animals and animals for slaughter;
- Introduction of requirements aimed at avoiding breed-related health and welfare problems: This could be achieved by the introduction of fixed targets for all scheme members for key health and welfare parameters associated with growth rate/production level, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

4.6 British Lion Quality Code of Practice

The British Lion Quality Code of Practice achieved a silver farming system rating (but no overall scheme rating) for its free-range laying hen standards but scored very poorly for its minimum standards. The Lion Code minimum standards generally only ensure compliance with minimum legislative standards.

The main recommendations for improvement of the Lion Code scheme are as follows:

- Prohibition of all cage systems (conventional cages are prohibited by legislation from 2012 but enriched cages continue to be allowed);
- Stipulation that raised slatted flooring cannot count towards perching space for birds in non-cage systems (in line with the requirements of EU Council Directive 1999/74/EC);
- Provision of adequate overhead cover for free-range birds;
- A reduction in flock sizes and the provision of partitions in the house to allow the formation of social groups for free-range hens;
- Prohibition of beak trimming;
- Introduction of a requirement for on-farm monitoring of health and welfare by producers, including targets for key welfare indicators;
- Strengthening of the requirements for training of stockpeople;
- Restriction of transport duration to eight hours;
- Introduction of standards for the slaughter of end-of-lay hens;
- Introduction of requirements aimed at avoiding breed-related health and welfare problems: This could be achieved by the introduction of fixed targets for all scheme members for key health and welfare parameters associated with production level, with a requirement to change the breed if producers repeatedly fail to meet these targets and the problem cannot be satisfactorily addressed through changes in management;
- Development of a system of monitoring welfare outcomes by the assurance scheme.

4.7 Code of Good Practice for Scottish Finfish Aquaculture (CoGP)

The Code of Good Practice for Scottish Finfish Aquaculture scored poorly and did not achieve a rating for the farming system or the scheme overall. The CoGP standards offer few welfare benefits compared with standard industry practice, although the requirement to use humane slaughter methods is a significant plus.

In general, the main good points of the CoGP standards include:

- A requirement to anaesthetise or slaughter broodstock prior to stripping;
- Requirement for on-farm monitoring of health and welfare by producers, including a sea lice monitoring strategy;
- Requirement for training of stockpeople;
- Prohibition of inhumane slaughter methods;
- Prohibition of the use of genetically modified stock.

The main recommendations for improvement of the CoGP scheme are as follows:

- A reduction in stocking densities;
- Specified standards for water quality;
- Prohibition of the killing of predators;
- Prohibition of the use of cleaner fish such as wrasse;
- Strengthening of the restrictions on mutilations and marking methods to prohibit all methods that cause distress or injury;
- Clear specifications for the length of time fish may be starved prior to slaughter with an absolute maximum of 72 hours;
- Introducing targets for key welfare indicators;
- Prohibition of triploid stock.

Overall, the Soil Association achieved the highest scores for all of the species covered by the analysis. This scheme offers many welfare benefits compared with standard industry practice and the scheme standards would be expected to provide a significantly higher standard of welfare than that provided by adherence to minimum legislative requirements. The Scottish Organic Producers Association and RSPCA schemes also offer significant welfare benefits compared with standard industry practice and minimum legislative requirements. In general, the Assured Food Standards (Red Tractor) schemes and the British Lion Quality Code of Practice ensure little more than compliance with minimum legislative requirements (the interpretation of which is considered inadequate in some cases). The Quality Meat Scotland scheme requires compliance with government welfare codes but otherwise offers few benefits. With one or two significant exceptions, the Code of Good Practice for Scottish Finfish Aquaculture also offers limited benefits above compliance with relevant legislation. Consumers seeking an assurance of high welfare standards would be advised to purchase organic products, especially those certified by the Soil Association, or RSPCA Freedom Food-certified products, particularly those produced to free-range standards.

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Acknowledgements

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GLOSSARY

ABM Assured British Meat - an assurance scheme covering beef cattle and sheep

ABP Assured British Pigs – an assurance scheme covering pigs

ACP Assured Chicken Production – an assurance scheme covering broiler chickens

ADF Assured Dairy Farms – an assurance scheme covering dairy cattle

AFS Assured Food Standards – an umbrella certification scheme that incorporates ABP, ADF, ABM, ACP and QBT, marketed under the Red Tractor logo

AHAW Panel Scientific Panel on Animal Health and Welfare – part of the European Food Safety Authority (EFSA) which advises the European Commission

AWO Animal Welfare Officer – appointed person responsible for animal welfare, e.g. in an abattoir

BCS Body Condition Score – a measure of body condition, typically on a scale from 1 (extremely thin) to 5 (extremely fat)

BWAP Bristol Welfare Assurance Programme – a system of incorporating animal-based welfare outcome assessment techniques into certification schemes, developed by the University of Bristol

CCTV Closed Circuit Television

Cleaner fish Fish species, such as wrasse, which consume parasites from the bodies of other marine organisms and may be kept with farmed fish for this purpose

CoGP Code of Good Practice for Scottish Finfish Aquaculture – an assurance scheme covering farmed fish

CO Carbon monoxide

CO₂ Carbon dioxide

DOA Dead On Arrival – animals that are found to be dead upon arrival at the abattoir

FAWC Farm Animal Welfare Council – an independent body providing advice on animal welfare matters to the UK Government

FCI Food Certification International – a certification body involved in auditing of the CoGP scheme, amongst others

Gait score A measure of walking ability, typically on a scale from 0 (normal gait) to 5 (immobile)

Gilt A young female pig

GM Genetically modified

Hockburn Lesions on the hocks of poultry caused by prolonged contact with wet litter material and excreta

HSA Humane Slaughter Association – an animal protection organisation

Lion Code British Lion Quality Code of Practice – an assurance scheme covering laying hens

Mastitis Inflammation of the udder

Mutilation An operation that involves interference with the bone structure or sensitive tissues

NH₃ Ammonia

Pododermatitis Lesions on the feet of poultry, often caused by prolonged contact with wet litter material and excreta (sometimes referred to as footpad burn)

PMI reject Poultry Meat Inspector reject – poultry carcass declared unfit for human consumption

ppm Parts per million

PWO Poultry Welfare Officer – appointed person responsible for poultry welfare, e.g. in an abattoir

RSPCA Royal Society for the Prevention of Cruelty to Animals – an animal protection organisation which operates the Freedom Food assurance scheme

QBA Qualitative Behaviour Assessment – a method of visual assessment of the welfare state of an animal or group of animals, developed by the Scottish Agricultural College and others for use as a practical tool for on-farm welfare assessment

QBT Quality British Turkey – an assurance scheme covering turkeys

QMS Quality Meat Scotland – an assurance scheme covering pigs, beef cattle and sheep

SA Soil Association – an organic certification scheme

SCAHAW Scientific Committee on Animal Health and Animal Welfare (the role of this committee is now fulfilled by the AHAW Panel)

Sex reversal A process of inducing male fish to become functionally female through exposure to hormones, often used to produce all-female fish for use in aquaculture

SFQC Scottish Food Quality Certification – a certification body involved in auditing the QMS and SOPA schemes, amongst others

SOPA Scottish Organic Producers Association – an organic certification scheme

SSPO Scottish Salmon Producers' Organisation – trade association for the salmon farming industry in Scotland

Stripping The process of removing semen or eggs from fish

Thinning Removal of part of a poultry flock for slaughter prior to depopulation of the entire flock

Triploid Having three sets of chromosomes (triploid fish are often used in aquaculture because they are sterile and can be grown to greater weights without reaching sexual maturity)

VHP Veterinary Health Plan – an action plan drawn up by producers, often in consultation with a vet, as a basis for managing the health and welfare of livestock

FARM ASSURANCE SCHEMES & ANIMAL WELFARE

How the standards compare 2012

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