UNILEVER SUSTAINABLE LIVESTOCK

IMPLEMENTATION GUIDE

This document provides extra interpretation for Unilever's dairy, beef, pork and poultry suppliers and their farmers on the requirements of the Unilever SAC, and guidance on how to fulfil those requirements, in addition to the advice in the main Implementation Guide.

CONTENTS

BACKGROUND TO THIS GUIDE

The Sustainable Agriculture Code (SAC), and its accompanying Implementation Guides are generic documents, and therefore not specifically written for livestock farmers.

This document provides extra interpretation for Unilever's poultry products (broiler meat and eggs), dairy, pork and beef suppliers and their farmers on the requirements of the Unilever SAC, and guidance on how to fulfil those requirements, in addition to the advice in the main Implementation Guide.

For cattle farmers it covers elements that are particularly relevant to dairy & suckler cows, calves and beef animals, pasture management, and management of manure/slurry, silage, and run-off, other nutrient sources, as well as pesticides and veterinary medicines. The section headings link directly to the section heading number in the Unilever SAC.

For pig farmers it covers elements that are particularly relevant to sows, breeding stock and rearing/finishing pigs, manure management and other nutrient sources, as well as pesticides and veterinary medicines. The section headings link directly to the section heading number in the Unilever SAC.

For poultry farmers it covers elements that are particularly relevant to broilers, pullets and laying hens, management of manure, run off and other nutrient sources, as well as pesticides, and veterinary medicines. The section headings link directly to the section heading number in the Unilever SAC.

However, these guides DO NOT give comprehensive advice on all of the SAC requirements. For more generic guidance on the SAC, e.g. on agrochemicals and fuels, fertiliser application, water management and areas such as social and economic factors, please see the main SAC Implementation Guide.

This document also outlines where changes or additions will be made to the existing SAC, to make it more inclusive of livestock systems. These changes will be made when the next version of the document is published, but it may help you to be aware of them now.

PLEASE NOTE that when the SAC requirements mention 'crop' this may refer to pasture and any crops grown for animal feed, as well as the raw material being produced for Unilever.

WHAT ARE WE ASKING FOR?

The Unilever SAC contains three types of requirement:

- 'Mandatory' – Non-compliance with these is unacceptable to Unilever
- 'Must' – Expected practices
- 'Should' – Practices representing high-level achievements in sustainability

It is crucial that you are fully aware of all legislative requirements in your country, which may require practices that go beyond those recommended in the following guide.

GUIDANCE ON LIVESTOCK-RELATED GOOD PRACTICES FOR SAC REQUIREMENTS

SECTION 2 **AGROCHEMICALS AND FUELS**

This section provides guidance on the storage and use of fertilisers, manure, pesticides and fuels on your farm. It also covers the storage of veterinary medicines. The use, application record keeping etc. for veterinary medicines are covered under the animal welfare section of the SAC (Section 9) and this guide.

Note: The term 'Crop Protection Product' (CPP) includes any pesticides (insecticides, herbicides or fungicides) used on farm, e.g. insecticide treatments for flies.

Key Issues in livestock production

- Nutrient management (application, storage and handling of manures/slurry, silage effluents and artificial/synthetic fertilisers)
- Pest management (application)
- Safe use and storage of pesticides
- Safe use and storage of agrochemicals and fuels
- Safe storage of veterinary medicines

NUTRIENT MANAGEMENT (SECTION 2.3, SAC PP.4-7)

For general advice on nutrient management practices, refer to the main Unilever SA Code Implementation Guide. The following gives specific guidance on the management and storage of manure, slurry and silage (including silage leachate).

Measuring Progress (2.3.2.1, SAC p. 4)

The Nitrogen Balance metric (see also Appendix A, SAC p.55) is not easily applied to livestock farming, and needs careful development to ensure that the data collected gives meaningful results. For now, livestock farmers who are using the Quickfire software to carry out a self-verification should answer zero to these questions. Those who are not using the Quickfire software should ignore requirement 2.3.2.1.

Legal Compliance (2.3.2.2 - 2.3.2.3, SAC p.4)

Legislation which covers the storage and application of artificial fertilisers, animal manure and slurry can be very strict, with potential severe financial penalties imposed for infringements.

It is therefore crucial that you are aware of legislative requirements in your local area and country, which may require practices that go beyond those recommended in the following section. Suppliers must also ensure that their farmers are aware of this (2.3.2.3), and they must be able to demonstrate how they comply with any legislation if they are asked to do so.

Manure and Slurry Management

Manure and slurry contain nutrients such as nitrogen, phosphorus and potash. Nutrient variability can be a problem when trying to determine the use of manure and slurry as a fertiliser resource, and every effort should be made to assess the nutrient content prior to application. This can be done using on-farm assessment tools, such as a slurry hydrometer or N content assessment kit, or by having a slurry sample analysed in a laboratory. Storage and application are discussed in further detail under the relevant sections.

Silage Effluent Management

Silage effluent or leachate is produced when fresh forage is compressed during storage and the contents of the plant cells are forced out. Although being mostly water, leachate also contains high levels of nutrients and organic acids, it is corrosive to concrete and steel and is extremely polluting to waterways. Silage leachate has a polluting potential of 20 times greater than animal manure.

Fertiliser Application (manure and slurry application, timing and techniques) (2.3.3.4 - 2.3.3.5, SAC p.6)

Note: For general information on fertiliser applications, including the use of buffer zones, see the main SAC Implementation Guide.

The nitrogen content of manure and slurry can vary enormously; there are various factors which can influence this, including animal type, and storage method. Nitrogen within manure and slurry is in the form of ammonium which is especially liable to volatilization (ammonium is converted to ammonia gas) during storage and especially during application. Manure and slurry application to land should be promptly followed by incorporation into the soil; this will optimise nitrogen availability for the crop. There are various methods to achieve this either via injecting slurry directly into the soil or through incorporation via ploughing or cultivation, this reduces nitrogen losses to the air and signif-

icantly reduces the risk of runoff. It has been found that 70% of nitrogen is retained if manure is incorporated within one day. Only 40% remains if incorporated in 2 to 3 days and only 20% of nitrogen if incorporated in 4 to 7 days.

Manure and slurry application should be undertaken to avoid over-application and run-off. Spreaders and other application equipment should be properly maintained and if necessary calibrated to enable accurate application rates (see also sections 2.5.1.2, p.10, and 2.6.1.1, p.12, of the SAC). There are videos available which demonstrate how manure application equipment can be calibrated.

Use appropriate application equipment and avoid, where possible, techniques such as high trajectory techniques that 'throw' slurry or manure into the air to spread it, especially if close to waterways or areas of high biodiversity value if there is no appropriate buffer zone/strip or barrier.

Improving feed management, for example, in some livestock, ensuring a better energy and protein ration, can decrease the mineral N-content in manure, resulting in lower ammonia emissions and more efficient use of nitrogen. Data on feed management can be found in the feed plan. Ammonia emissions and their control are also discussed in the 'Manure Handling' section on page 6 of this document.

In developing countries where tractors are usually not powerful enough for such techniques, incorporation of manure is often done using a plough. A comparison of different types of application methods with their costs/applicability and reduction of emissions can be seen in the Food and Agriculture Organisation (FAO) document (http://www.fao.org/ag/againfo/programmes/en/lead/toolbox/Tech/31ProMan.htm#incorp).

Whatever technique is used for manure and slurry application the following points should be followed:

- Never allow slurry to pool or pond and runoff to surface water, adjacent property or drainage ditches.
- Never apply slurry on heavily sloped land.
- Avoid applying manure if heavy rain is expected, since the rain may simply wash the manure off the field if it is sitting on the surface of the soil. Light rain, on the other hand may aid incorporation.
- Incorporation may not be appropriate on permanent pastures, but other management techniques to prevent nutrient losses should be used, e.g. timing with the weather (as described above).
- Avoiding application close to water sources and using buffer strips/zones between fields and water sources also prevent manure and run-off from reaching the water.
- Quickly incorporating manure has a financial benefit.
- As a general rule, manure should not be applied to frozen soils because it cannot be easily incorporated, leading to higher run-off potential and nutrient loss.
- An effort should be made to spread manure earlier in cold weather climates (i.e. before winter sets in) to ensure that application to frozen soils is avoided. However, sometimes local laws may require this, e.g. in some areas of the US there are daily manure spreading laws, used as a means to overcome inadequate manure storage. All legislation, local or national, needs to be complied with.

For practical advice on manure management plans, including how to work out where manure should and should not be used, and the area of land suitable for the application of manure resulting from your farm, we can advise using the UK government guide called 'Manure Management Plans, a step-by-step guide for farmers' (http://adlib.everysite.co.uk/resources/000/015/584/manureplan.pdf) This guidance is obviously more suited to temperate regions and European soils than to other parts of the world.

Similar guides may be published by your own authorities, which may be more applicable for your region, for example:

- **Global** – basic advice from the FAO on application techniques, with information on the circumstances under which they should be used. Applicable to all countries and levels of mechanisation: http://www.fao.org/ag/againfo/programmes/en/lead/toolbox/Tech/31ProMan.htm#incorp
- **US** – most nutrient management plans are completed to specifications laid down by the National Resource Conservation Service (NRCS). A number of technical documents developed by them, and associated extension services, are available at: http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops/npm/.

Obviously the first guidance to look at is your local legislation – it is CRUCIAL that all local laws are adhered to, regardless of the advice in this implementation guide.

Manure, Slurry and Silage Storage Systems (2.3.3.6 (c), SAC p.7)

Note: Refer to main Unilever SAC Implementation Guide, Section 2.6 for storage of synthetic fertilisers, Crop Protection Products (CPPs) and fuels.

Storage areas for manure, slurry and silage can be potential sources of water pollution if not managed properly. If slurry, manures or silage effluent, enter a watercourse the micro-organisms within the aquatic environment begin to break down the nutrients, this process uses oxygen within the water environment and can therefore suffocate other aquatic life (plants and fish). Biological Oxygen Demand (BOD) is a measure of the amount of oxygen required by these microorganisms to break down the organic material. This can be used as a gauge to measure the polluting potential of organic materials – the higher the BOD the more pollution can be caused. For cattle manure the BOD is 15,000 – 20,000 mg/litre of oxygen, pig manure is 20,000 – 30,000 mg/litre of oxygen and silage leachate is 60,000 – 70,000 mg/litre of oxygen.

Again, many of the requirements in this area are legislated for, and at a minimum you should check local legislation is complied with.

The best way to prevent such pollution is to ensure that storage systems:

- Are well maintained (to avoid leakage of stored material)
- Are of adequate size (to avoid spillage due to overflows)
- Are well contained and not subject to water infiltration or run-off
- Do not allow contact of stored material with porous or coarse-textured soils

You can prevent run-off and consequent pollution by using closed or covered storage and by ensuring that diversion ditches or other techniques are used to prevent moving water from coming into contact with the stored material. Permanent stores should have solid sides and an impermeable base that slopes so that run-off can be collected easily in a sealed underground tank. Where this is not possible, other methods should be used to prevent pollution, such as collecting and re-using run-off as fertiliser. Urine, slurry and silage effluent should ideally be in covered stores or tanks to limit gases and reduce water intake. Even if these features are not in place in current facilities, they should be considered as part of new building projects.

Finally, locating these storage systems an adequate distance (preferably at least 30 metres/100 feet) from wells, surface water, adjacent property, drainage ditches or other areas that could result in run-off reaching water sources can prevent water pollution.

For example, where solid manure is temporarily stored outside in heaps, they should never be:

- within 10m of a surface water or land drain;
- within 50m of a spring, well or borehole;
- on land likely to become waterlogged;
- on land likely to flood

In many parts of the world, the capacities of manure and urine stores are defined by legislation. e.g. "must correspond to that produced in 8 or 10 months". In many European countries, the legislation requires stores to be built for all housing for 10 animals or more. Only clean water, for example roof drainage, is allowed to enter surface water drains, watercourses or soakaways. Separate drainage and storage is required for cleaning, disinfecting and contaminated water.

Protecting farm inputs such as silage and fertiliser can improve efficiency and reduce wastage of valuable inputs, as well as protecting watercourses. For example, preventing water from coming into contact with silage can help to maintain the freshness and quality of the silage, thereby minimising additional feed costs.

Manure Handling (2.3.3.6 (d), SAC p.7)

Ammonia emissions have already been discussed on pages 5. If ammonia emissions are high (excessive odour levels), nitrogen is not being used efficiently. Ammonia evaporation is directly related to the area of exposed surface; the larger the area the higher the evaporation rate, therefore for pigs and cattle increasing the frequency of slurry removal from solid floors, helps reduce ammonia emissions by over 50%. The separation of faeces and urine in these systems can also assist in reducing emissions, by grooving concrete or having a v-shaped 3% sloping floor with a central channel enables the urine to be separated from the manure reducing emissions.

Animal manures can contain human pathogens (disease-causing microorganisms) which can pose a potential risk to human health if animal wastes are not effectively handled and stored. There are three types of pathogen; viruses (Influenza), bacterium (Salmonella spp., Campylobacter spp., and Escherichia coli) and parasites (Protozoans), which have the potential to infect people (and animals).

It is also important that manures and slurry do not enter water courses through direct contamination or through run-off (see 'Manure, Slurry and Silage Storage Systems', page 5), as pathogens can potentially contaminate drinking water sources.

Livestock products, such as milk from dairy farms, must be handled and stored correctly to avoid contamination by manure, especially during the milking. All staff working on livestock farms should clean and disinfect their hands before handling food or eating or drinking, and if necessary soiled clothing should be remove.

For further information on control and management of pathogens use the following link:
http://www.extension.umn.edu/distribution/livestocksystems/DI8544.html - Best Management Practices for Pathogen Control in Manure Management Systems

PEST MANAGEMENT (SECTION 2.4, SAC P.7)

Pest management on livestock farms includes management of pests that might affect crops, forage or pasture grown for animal feed, as well as management of vermin (birds, rodents etc.) and other pests (cockroaches, flies etc.) that might affect the animals or housing facilities. Good pest control is necessary to prevent loss of pasture or forage, to protect animal health. Crop Protection Products (CPPs) must be handled and stored with care, to prevent damage to human and animal health and prevent damage to the environment.

Please note: Most of the generic guidance in the main SAC Implementation Guide applies to CPP use on livestock farms. This section gives guidance on one specific pest problem often found on livestock farms.

An Integrated Pest Management (IPM) approach to fly control (other examples could include rats, cockroaches etc.)

An IPM approach, as described in Section 2.4.3.1-2.4.3.3, SAC p.9 can be applied to the control of pests and vermin on livestock farms.

This example looks specifically at flies. Sanitation, a cultural control (requirement (c)), is probably the most important action you can take to control flies. Finding and eliminating breeding places is the first step. The major fly breeding areas in livestock production areas are:

- around manure storage areas
- around feeding areas
- under fences – in outdoor systems
- in poorly drained, moist areas

Fly populations often increase rapidly after periods of rain, especially when it is warm. Heavily bedded, infrequently cleared out areas, such as calf pens, can be one of the main sites for fly breeding Farmers are encouraged to look at the bedding to check for maggots (fly larvae). The best spots to check are around the water and along the edges of pens. These areas are moist and can get little traffic from livestock. If maggots are found, rid the area of manure. Good manure management is key – constant disturbance is required, and manure in areas that are not disturbed by livestock e.g. along fences or around feed structures needs to be regularly moved or removed.

Identification of flies and understanding their life cycles (2.4.3.2(d)) should not be too difficult, but if you are in doubt, speak to your local adviser. Infestation levels can be checked either by using sticky traps or simply counting flies on the animals.

Natural enemies of flies, usually parasitic wasps, are often found on farms, their activity should be encouraged (SAC requirement 2.4.3.3. (b), p.9). If pesticides need to be applied they must be used in a way that minimises harm to flies natural enemies. Broad-spectrum pesticides should not, for example, be sprayed directly onto a fly development site as natural enemy populations tend to be present on the surface of the development site, while fly larvae are somewhat protected beneath the surface. In some regions, commercially produced parasitic wasps are available for release, e.g. in the Netherlands from Koppert. Speak to your local adviser to see if they are available.

Insecticides are the least preferred method of control. However, if used safely, and in conjunction with non-chemical methods, their use can contribute to good control.

Knockdown insecticides, e.g. pyrethrin, are best applied during early morning hours when stable flies are less active and are concentrated in overnight resting locations such as barns, tree lines, and shade structures.

Residual insecticides, e.g. permethrin, are best applied to structures on which flies tend to rest, e.g. building walls, fence lines, shade structures, surrounding vegetation. The use of any chemicals near livestock product storage areas, or milking areas in dairy production, must be carried out with extreme care, and in accordance with any Hazard Analysis Critical Control Point (HACCP) plans you have in place (see requirements 10.3.3.14-10.3.3.16, SAC p.43).

Because they have short life-cycles, flies develop resistance to pesticides very quickly, and using a different class of residual insecticide each time an application is made is important (Section 2.4.3.3 (a)). One might, for example, select a pyrethroid for one treatment and switch to an organophosphate for the next treatment. Continue to rotate throughout the season to achieve maximum control and to keep resistance to a minimum.

For dairy production, further detail of using the IPM approach for the control of flies can be seen in the University of California guide "Management of Nuisance Flies: Dairy Design and Operational Considerations", University of California Department of Entomology (2008). (http://www.stancounty.com/planning/pl/act-proj/other/Foster-Farms/Draft-EIR/App-D.pdf)

AGROCHEMICAL SAFETY AND RISK ASSESSMENT (SECTION 2.5, SAC P.10)

Risk Assessment - consideration of pesticide use (2.5.1.2 (a))

For dairy operations, clearly the protection of milk is fundamental (see also the requirements regarding HACCP in requirement 10.3.3.14-10.3.3.16, SAC p.43). Therefore, the use of CPPs in milking areas and milk storage rooms should be restricted to ensure that there is no contamination of milk, e.g. to when there is no active milking activity and no milk in storage. Milking equipment must be protected from contact and contamination.

Similarly, for egg production the use of CPPs in egg storage and handling rooms should be such that eggs are protected from contamination.

AGROCHEMICAL & FUEL STO1RAGE (SECTION 2.6, SAC P.12)

In addition to the general advice in the main SAC Implementation guide, the following applies:

Veterinary medicine storage and record keeping (2.6.1.9 (a)-(g))

Veterinary medicines must be stored in secure facilities, which are locked to prevent access by unauthorised people or children, with a record of all medicines kept in the store, and they must not be stored with agrochemicals or fuels. All requirements in 2.6.1.9 apply. Medicines must be stored according to manufacturer's instructions and recommendations; this may require some vaccines being stored in refrigerated facilities which must also comply with the above requirements.

Links to other sections

Section 4 – Water
(nutrient management, agrochemical use and storage)
Section 5 – Biodiversity
(nutrient management, agrochemical use, IPM)
Section 3 – Soils (nutrient management)
Section 8 – Social and Human Capital
(safe agrochemical use and storage)
Section 9 – Animal welfare (use of veterinary medicines)

SECTION 3
SOILS

A healthy, fertile soil is important for producing a high yield and quality pasture or crops with minimal inputs. Good soil management is also important for protection of watercourses and for biodiversity. The main principles and practices behind sustainable soil management are covered in the main SAC Implementation Guide. Many of them also apply to pasture management. This section covers additional guidance for soil management under pasture and looks at aspects such as compaction, erosion and contamination.

Key Issues in livestock production
- Soil compaction
- Soil erosion
- Soil contamination

SOIL MANAGEMENT (SECTION 3.3, SAC PP.14-16)

Pasture Management (Soil Management System, 3.3.3.1, SAC p.15)

Protecting soil health under pasture is important – **well-structured soils grow the best pasture**. The components of your soil management system (as listed in 3.3.3.2 (a)-(j)) are as necessary for pasture as for any other crop. Soil structure can be maintained by preventing compaction and erosion (see below), and also by using minimal tillage techniques (see main SAC Implementation Guide) and appropriate timing in cultivation. Good pasture management also requires careful forage species selection, and regular soil nutrient and pH testing. Phosphorous and potassium levels particularly can vary widely in pastures and should be carefully monitored in case supplements are required.

Specific pasture management advice, including optimal stocking rates and suitability of plant species, is region-specific and you should speak to your agricultural adviser or extension service for how to best manage your pasture. Stocking rates can also be affected by legislation on nitrate loading limits per hectare. This is an area that needs to be considered in both your soil and nutrient management systems (see also requirement 2.3.3.2, SAC p.4).

The following links show examples of soil management plans for dairy, beef and outdoor pig farms:
- http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0006/167028/soil-dairy-beef.pdf
- http://www.bpex.org/environment-hub/soil-water/SoilManagementPlan.aspx

Managing the risk of soil erosion (3.3.3.2 (d), SAC p.15)

In livestock areas, soil erosion can be prevented by:
- Avoiding overgrazing – pasture cover protects the soil, so overstocking can lead to the soil being eroded in heavy rainfall. In cattle production, cattle should be moved to another area before bare patches appear – a rotational grazing system, where cattle are moved regularly (the time of which varies depending on the rate of growth, and hence the season and weather conditions), can be used. Other methods, e.g. set stocking, can also work well, as long as grazing is well planned, by estimating grass yield, grazing rate etc.
- Strategic placement of access points, watering points and gates, where the level of animal movement is high – especially in wet regions, you should avoid placing gates and access points at the lowest point of a field (to reduce the potential for channelling surface water run-off and to cut off the route for any eroded soil particles).
- Excluding animals from drainage lines and watercourses – soil loss in these areas is high in heavy rain, so these areas are often fenced off to prevent grazing.

Managing the risk of soil compaction (3.3.3.2 (e), SAC p.15)

Soil compaction from livestock (sometimes known as 'pugging' or 'poaching') can reduce pasture yield, encourage weed growth and reduce nitrogen fixation, so needs to be avoided where possible. It is most likely to be an issue in temperate regions when the ground is wet, so action may only be needed in certain regions and at certain times of the year. For example, in temperate winters especially, animals may need to be restricted to one area of the field at a time, with the area being rotated over time. In regions where compaction is a risk, animals should also be restricted to designated laneways to and from areas of high use (for example, feeding or milking areas) and stocking densities should be checked to ensure they are not too high.

Other strategies include:
- Keeping pasture cover dense – compaction is worse where pasture cover is sparse.
- Installing several watering points and shade areas (helps to break up the herd into smaller groups). Access can be rotated to further reduce compaction risk.
- Use loafing areas or feeding pads – these are areas can be constructed from either a porous material or concrete (although care should be taken that this will not cause hoof injuries).

Managing soil compaction from machinery, e.g. used for application of manure, is covered in the main SAC Implementation Guide.

If soil compaction is identified as already being a problem, certain pasture management techniques can be used to help alleviate the issue, for example growing deep-rooted grass species (e.g. Phalaris, Tall fescue, Cefalu, arrowleaf clover, although the suitability of species will vary depending on region and soil type, so speak to a local adviser before taking action), which can help break up compacted soil layers, or increasing soil organic matter to enrich and strengthen soil.

Mechanical measures, such as subsoiling (deep-ripping) the pasture can also be used. However, the effectiveness of subsoiling depends on soil texture, moisture content, soil profile and compaction extent, and DOES NOT provide a permanent cure for compaction – if the source of the compaction is not removed or effectively managed, the soil will become compacted again.

Managing the risk of soil contamination (3.3.3.2 (g), SAC p.15)

Some veterinary medicines pose a risk to soil health, for example copper or zinc sulphate, which is sometimes used in footbaths to control hoof diseases in cattle and is included in pig rations/feed to increase growth rates. When copper sulphate is applied to soil, it binds to organic matter and therefore accumulates in the upper soil layers. As plants only require small amounts of copper to grow (annual removal rates are less that 0.55 kg/hectare for a typical grain or forage crop) therefore high copper levels can accumulate in soils and can be toxic to plants and soil microbes.

A suitable disposal system should be in place, and practices adopted to reduce the amount used, or disposal rates diluted and spread over larger areas of land (dilution effect). If copper/zinc is applied to the land, then concentrations in the soil must be monitored to ensure levels do not become toxic.

The risk of all veterinary medicines entering the soil should be understood – this information will often be included on the medicine data sheet, but if not, manufacturers should be able to give you relevant information.

For further information relating to copper sulphate visit: http://tristatedairy.osu.edu/Proceedings%202007/Epperson.pdf

Links to other sections

Section 2 – Agrochemicals and Fuels (nutrient use and soil health)
Section 4 – Water (soil erosion and water quality)
Section 5 – Biodiversity (compaction and soil biodiversity)
Section 10 – Animal welfare (use of medicines and footbaths)

Future requirement changes to the SAC

3.3.3.2 (b) will read "Crops are only grown **and livestock only grazed/housed**..."
3.3.3.2 (d) will read "... loss include **overgrazing**, water erosion..."
3.3.3.10 (b) will read "... are used, or **livestock kept**..."

SECTION 4
WATER

The availability of clean, high-quality water is essential to life. Prevention of water pollution is critical to maintain ground water that is safe for drinking, and to protect aquatic life in ponds, streams and rivers. Water must be used carefully and with respect for others in your catchment area.

Note: Refer to main Unilever SA Code Implementation Guide for general advice on considering social and environmental impacts of water use, for protecting water quality from sediments, agro-chemicals, fuels and human sewage, and on irrigation water use and management.

Key Issues in livestock production
- Water pollution (effluent run-off, manure, silage, milk-house waste, urine and faeces)
- Water use efficiency (cleaning, milk cooling systems, irrigation)

WATER MANAGEMENT (SECTION 4.3, SAC PP.17-19)

Measuring Progress (4.3.2.1, SAC p.17)

The water metric requires information on volume of irrigation water applied to pasture or crops for animal feed per year (if relevant) and the volume of water used per year for watering animals, cleaning and manure management.

It must be stressed that livestock drinking water should never be limited. Requirement 9.3.3.1 (Section 9 – Animal Welfare) states that "animals must have freedom from thirst... by ready access to fresh water". This requirement must not be compromised by water efficiency measures.

Using water resources efficiently (4.3.3.1, SAC p.18)

While in some regions there is plenty of water available, in other areas water scarcity is a serious issue, and it is important to start thinking about a water use plan. As water shortages are realised, water costs may increase, impacting profitability. Once a baseline of water use is established, proactive steps can be taken to increase efficiency and optimise water use. Also, while water appears to be a plentiful resource, it is important to determine if this is actually true by investigating the health of a farm's specific watershed/catchment.

Water is used for the animals' drinking water, cooling, cleaning, and in the case of dairy, milk-cooling. In some regions it is also used to irrigate crops and/or pasture. Several management strategies on farms can decrease water use. These include:
- Sweeping or scraping floors before washing down to remove solid waste and reduce the amount of water required for cleaning.
- Using wastewater to flush feeding areas and free-stall barns, directing the water flow to the manure/slurry storage area (this also prevents pollution with nutrient-rich water and enables nutrients to be used on the land).
- Using a high-pressure hose to clean more quickly and with less water, but taking care not to use them on animals themselves.
- Ensuring pipework and water infrastructure is in good condition with no leaks .
- Collecting rainwater from roofs of stock housing, which provides an alternative source of water, as well as potentially reducing the volume entering the slurry storage system. If rainwater is collected for use as drinking water appropriate treatments should be implemented to render the water potable.

Protect and enhance water quality – Pollution from livestock and wastewater (4.3.3.2 (f) and (h), SAC p.18)

There are a number of sources from which water pollution might arise, and a number of ways in which the risk of such pollution from livestock can be managed:
- Minimise livestock access to watercourses – this also prevents soil erosion.
- Before any new sheds are constructed, ensure that they are located at a safe distance from ground water (wells) or surface water sources – this is often dictated by legislation.
- Manage animal holding areas and pastures to avoid effluent run-off, e.g. by storing and spreading farm manures in accordance to local requirements. See manure management guidance on pages 4-6 of this guide, and the advice below.
- Direct wastewater to manure storage areas (as above).

Livestock Yard Management

Livestock yards (barnyards, holding areas, woodchip corrals, stand-off pads and feedlots) are concentrated areas of livestock, and hence their wastes, and are therefore vital to protection of water quality. These yards, especially when on permeable soils or near on-farm water sources, can cause nitrate and bacterial contamination in ground or surface water. To minimise the possibility of contaminants leaching to groundwater or running off to surface water, such yards should be located on concrete or fine-to-medium textured soils over 100 feet/30 metres from water sources such as wells, surface water, adjacent property, drainage ditches or other areas that could result in the run-off reaching water sources. The best means to achieve this is to prevent flooding in livestock yards by diverting rain and/or flood-waters from the area. Having a roof over the yard or otherwise diverting water from the yard is the best way to prevent run-off. This is especially important if yards are on a slope. Other practices, such as keeping the yard clean, diverting run-off to manure storage areas or collecting and reusing run-off (e.g. as nutrients on fields), can prevent run-off and hence minimise potential pollution to water sources.

Milk-house Washings (Dairy only)

Water used to clean the milking parlour and milking equipment contains high levels of organic matter, nutrients, chemicals and

microorganisms, and can contaminate water with ammonia, nitrate, phosphorus, detergents and disease-causing organisms if not disposed of properly. Milking parlour wastewater is made nutrient-rich by virtue of having high amounts of milk residues or being washed down the drain with manure and feed. This nutrient-rich water can lead to pollution if it is untreated before it reaches water supplies. To minimise this potential impact to water, wastewater should be diverted to manure storage areas (see nutrient management, Section 2.3). Nutrient-rich first rinse water can also be reused by applying it directly to fields as fertiliser. If applying first rinse to fields, care should be taken to match field nutrient needs with nutrient content of first rinse. Cleaning the parlour of feed and excess manure prior to wash down will minimise the amount of this material that enters water and can also minimise the volume of water needed for cleaning.

Links to other sections
Section 2 – Agrochemicals and Fuels (nutrient management, agrochemical use, IPM)
Section 5 – Biodiversity (effect of water pollution)
Section 8 – Social and Human Capital (catchment level issues)

SECTION 5
BIODIVERSITY

Biodiversity management in any agricultural system depends greatly on the region in which the farming takes place, and the ecosystem in which the farmer is operating. Livestock farming is no exception to this, and the actions needed to protect rainforest from pasture expansion in South America are clearly very different from action needed to protect nesting birds from forage cutting in Europe. The examples given below give an idea of some of the sorts of action livestock farmers can take in managing biodiversity. Please note that many of the other management requirements in the SAC will also have biodiversity benefits, e.g. protection of water courses from pollution, safe and reduced use of pesticides, protection of soil health etc. In turn, protecting biodiversity can have many benefits to the farmer, e.g. in natural pest control, healthy soils producing high yields of pasture. In some regions, financial grants or subsidies may be available for taking action to protect or enhance biodiversity.

Key Issues in livestock production
- Pasture expansion and management
- Nutrient and pest management impacts
- Livestock disturbance of natural habitats

BIODIVERSITY PROTECTION AND ENHANCEMENT (SECTION 5.3, SAC PP.20-23)

Measuring Progress (5.3.2.1)

The metric for biodiversity measures the area of land that farmers enhance in some way for wildlife – this can be land that is non-productive, e.g. unsuitable for grazing or growing feed, or land that is used for farming. It also includes any local wildlife conservation projects that you support in some way. You will need to provide data on the area of land you manage in a way that is beneficial to wildlife and on any local biodiversity projects you are otherwise involved with.

Biodiversity Action Plan (BAP) (5.3.3.2 - 5.3.3.4)

Activities around wildlife protection or enhancement should be laid out in the biodiversity action plan (see main SAC Implementation Guide for more on how to develop a BAP, and the sorts of activities can be included). Issues that could be considered in a BAP for a livestock farm include (but not exclusively) the following:

Managing pasture for biodiversity

Intensively grazed pasture can be low in biodiversity value, due to the potential lack of natural features – farmers can increase biodiversity by adding features such as hedges, wooded areas, windbreaks and field margins or buffer zones that have limited livestock access and are not treated with fertilisers or pesticides. They can increase the usefulness of these areas by planting native plant species, or creating habitats that encourage particular native wildlife. Some solutions are very simple, for example a strip of two to three metres of uncut grass near a hedge or other boundary produces many more insects and because of that many more birds. Obviously this reduces the area of pasture available for livestock, so if you have the choice of putting a field margin in a more or less productive field, you should choose the least productive one.

Another issue in grassland can be nesting birds. Farmers can protect bird species by leaving certain areas ungrazed or mowed until bird nesting is complete. The timing depends on the regions you are in and the bird species present. Areas of pasture with low-intensity grazing (such as areas only used for a small part of the year or 'dry' cattle who do not need to get to milking parlours) can often have a relatively high biodiversity value, especially in Europe where many species evolved under conditions of low-intensity grazing.

Management of riparian areas

Riparian areas, the edges of streams, rivers, ditches etc., provide unique habitats for many plants and animals. They also play a role in soil conservation and protecting the aquatic ecosystem from damage and pollution. Management of livestock to prevent them trampling, grazing and adding nutrients to these areas, for example by fencing them off and allowing natural vegetation to regenerate, greatly enhances biodiversity. These areas should also be excluded from fertiliser and pesticide application. The size of the strip/buffer zone left beside the waterway depends on several factors (type of water source, farming system etc.), but should be at least 3 metres. In many situations, e.g. when pesticides are being sprayed, the size of the strip will be larger than this, with recommendations ranging from 3 to 50m. A full table of recommended sizes for buffer zones is included in the main SA Code Implementation Guide in the section on fertiliser application (requirement 2.3.3.4) and in Appendix 2B.

Management of on-farm areas that are unsuitable for grazing or feed production

If there are areas of the farm that are non-productive, these can often be improved for wildlife, for example by creating a pond, planting with native plants that encourage pollinators or natural enemies of pests for biological control benefits, or with native trees. Farm buildings can also be used to put up nest boxes for birds. Other examples are listed in the main SAC Implementation Guide.

Avoiding disturbance by livestock

As mentioned in the sections above on natural features and riparian areas, excluding livestock from certain areas can benefit biodiversity. This is also the case for any areas of high biodiversity value already existing on the farm, e.g. patches of woodland. If such areas are identified, their benefit should be maximised by establishing physical barriers to prevent disturbance by livestock.

Silvopastoral systems

This involves planting trees and/or shrubs in grassland and savannas. It is often used in tropical regions, although it is also the traditional livestock system in Southern Europe. The system

promotes biodiversity and contributes to carbon sequestration due to the presence of trees. It can also have other benefits, e.g. in some climates grass grows better under the trees because of the shade provided (though in other climates the opposite is true), soil is protected from erosion, and the trees can also deliver an income. In warmer climates there are also potential animal welfare benefits, due to the shade from the sun.

Animal Genetic Diversity (5.3.3.16, SAC p.22)

Although breeding programmes have been successful in improving productivity and resistance to some conditions, lack of genetic diversity is a potential issue within livestock farming, as inbreeding can reduce the productivity and hence profitability of animals. However, this issue should be dealt with at the industry level, and there is no consistent advice to farmers. We advise farmers to be aware of the genetic diversity within the herd, and work with relevant breeding programmes that aim to prevent inbreeding.

Links to other sections

Section 2 – Agrochemicals and Fuels (nutrient management, pest management, IPM)

Section 4 – Water (management of buffer zones around streams, rivers and ponds)

Future requirement changes/additions to the SAC

5.3.3.3(a) will read "... where the Unilever raw material is produced..."

5.3.3.16 will read "... improve profitability, reduce the need for CPPs **and prevent animal health problems that lead to enforced culling of stock.**"

Need new requirement (Livestock Disturbance) to be inserted before 'Purchasing of natural products', to say "Farmers should protect natural ecosystems from livestock disturbance by establishing physical barriers – SHOULD".

SECTION 6
ENERGY

Energy management provides you with an opportunity to save money as well as reduce your impact on the environment. This section gives you ideas on where you may be able to make efficiencies, but you will need to assess your own usage before working out where the best savings can be made.

Key Issues in livestock production
- Direct energy use (running equipment such as fans, pumps, refrigeration, heating, lighting)
- Livestock greenhouse gas emissions

ENERGY EFFICIENCY (6.3.3.2, SAC P.25)

Note: Refer to main Unilever SA Code Implementation Guide, Section 6.3.3 for general advice on farm energy management, renewable energy etc. and for specific guidance on energy savings in cropping systems.

Energy use can be split into direct use (gas, electricity and other fuels) and indirect use (energy used in the production of feed, artificial fertiliser and machinery). All energy use is associated with greenhouse gas emissions (see later section), and almost always costs money.

A large proportion of direct energy use on farms comes from running equipment (pumps, fans, refrigerators, generators etc.). Savings can be made by identifying and reducing waste, and by investing in more efficient technology – these are listed below, together with more general energy-saving advice. More information can be found in the references at the end of the section.

Milk Cooling (Dairy)
- Use plate heat exchangers for milk pre-cooling.
- Install a heat recovery system with or without the pre-cooling system.
- Install direct expansion tanks (preferably with a 2-stage pre-cooler).
- Remember that variable speed drives in vacuum pumps save energy, reduce pump noise while milking and potentially reduce wear and tear.
- Consider scroll compressor systems, which typically save 15-25% electrical costs compared to conventional reciprocating compressors, and are quieter and more reliable.
- Consider also alternative energy-efficient milk cooling systems, such as those powered by solar energy or by evaporation technology (see also section on renewable energy, requirement 6.3.3.3).

Water Heating
- Ensure water storage tank is well insulated to minimise heat losses.
- Fit any immersion heaters with a time switch to ensure heating time is minimised. Time switches can also be used to make the most of cheaper-tariff electricity, e.g. in some regions tariffs are cheaper at night.
- Investigate using a heat recovery unit, which can recover up to 60% of the heat extracted from cooling milk and convert it to hot water for use in pipeline and parlour cleaning.
- Investigate systems that use alternative energy sources, e.g. biogas or solar energy to produce hot water (see also section on renewable energy, requirement 6.3.3.3).

Building Ventilation
- Maximise the use of natural ventilation, using prevailing winds and adjustable barn openings.
- Remember that switching to efficient fans can produce significant savings on both small and large farms. Fan blades should be cleaned to maintain efficient energy use.
- Use thermostats to make sure ventilation is not used unnecessarily.
- Make sure ventilation equipment is regularly cleaned and well maintained.
- Use opaque rather than transparent/translucent materials for roofing on the sunny side of a building or in warmer climates.
- When planning new buildings, position the barn in a way that it is not in full sun (especially relevant for warmer climates).

Lighting
- Convert tungsten lighting to discharge lighting. There are a wide range of efficient alternatives, including compact fluorescents which can be used as a direct plug-in replacement, and high-pressure sodium lamps which can be used to light yards and buildings. Lighting costs can be cut by as much as 80% by using the right type of lighting.
- Use time switches or sensors to make sure lights are only on when they are needed – the need to give the animals a period of rest from light is also relevant here (linked to animal welfare).
- Make efficient use of natural light. Installation of windows can reduce the need for artificial lighting (as well as benefiting the welfare of the animals).

Further detail on these technologies and on other ways of saving energy can be found at:
- http://www.fecservices.co.uk - UK based advice on reducing farm energy use.
- http://www.bpex.org.uk/environment-hub/energy/EnergyUsePigFarms.aspx - UK based advice on energy benchmarking for pig units.

RENEWABLE ENERGY (6.3.3.3 - 6.3.3.4, SAC P.26)

Renewable energy can be used directly (i.e. generated on farm) or indirectly, i.e. by buying 'green power'. Indirect use should be investigated in discussions with your current, or alternative, power provider.

Renewable energy production on farm can be achieved through use of wind, solar or biogas (methane gas from anaerobic digestion). Wind and solar power opportunities are site specific and should be discussed with a local consultant.

Biogas (anaerobic digestion)

Biogas is produced from manure using anaerobic digestion, a natural process in which bacteria break down manure and other organic matter in the absence of oxygen, generating a mixture of methane and carbon dioxide – the biogas. Producing biogas in this way reduces methane emissions and hence greenhouse gases (GHG) and potentially odour and can also produce both electricity and fertiliser for use on crops or pasture. The economic and practical feasibility and indeed sustainability of a biogas plant depends on various factors, and if you are interested you should contact a local anaerobic digester provider. Depending on your location, you may be eligible for government grants. Unilever does not support the use of food crops for bioenergy production, and we would advise against growing crops for the purposes of producing biogas.

Further information on biogas production can be found at: http://www.bcfarmbiogas.ca/files/pdf/AD%20fact%20sheet%201.pdf (British Colombia Ministry of Agriculture and Lands factsheet)

GREENHOUSE GAS EMISSIONS (6.3.3.7, SAC P.26)

Use of the technologies and energy efficiency measures discussed above would reduce GHG emissions associated with energy production, as well as from methane production in the case of anaerobic digestion.

As well as energy use, livestock farming is associated with other sources of GHG emissions:

- Methane directly from cattle - (as well as from manure)
- Nitrous oxide associated with fertiliser use and from manure
- Carbon dioxide (CO_2) from feed and fertiliser production

An assessment of GHG emissions should be carried out using the 'Cool Farm Tool' (or a similar calculator if you are using one already), a calculation tool which can be found on http://www.coolfarmtool.org/CoolFarmTool

As well as quantifying GHG emissions, the tool can show you which management practices may enable you to reduce them.

These include the following:

- **Reducing use of artificial fertilisers** – by making the most of the nutrients available in manure and slurry, and by making sure you are only applying what is needed for soil fertility and plant requirements. You may be able to reduce your use of artificial fertilisers, saving money and reducing your emissions.
- **Reducing or avoiding ploughing of grassland** – this reduces nitrous oxide emissions significantly.
- **Optimising feed quality** – increasing the efficiency with which animals use nutrients to produce milk, eggs and meat can result in reduced methane emissions per litre of milk or kg of eggs or meat. This can be accomplished by feeding high-quality, highly digestible forages or grains – basically by providing a balanced diet targeted at the anticipated production. Speak to your feed provider for more information on your particular case.
- **Increasing the longevity of breeding stock** – fewer replacement stock are required overall, giving additional benefit in terms of wasted inputs.

Links to other sections

Section 2 – Agrochemicals and Fuels (biogas plants as part of manure management and fertiliser production, nutrient management as a source of reduction of nitrous oxide)

Section 10 – Value chain (links to profitability)

SECTION 7
WASTE

Waste on livestock farms can include non-hazardous (e.g. paper, cardboard) and hazardous (e.g. expired veterinary medicines, fallen stock and used fuels such as oil) waste. General farm waste management, including reduction and recycling strategies, are covered in the main SAC implementation guide. This section focuses mainly on animal-related waste streams. PLEASE NOTE that this section does not cover manure management – this is covered in the nutrient management section on pages 4 - 10 of this guide.

Key Issues in livestock production
- Reducing, reusing, recycling and re-thinking waste
- Management of hazardous waste

LEGAL COMPLIANCE (7.3.2.2, SAC P.29)

Legislation on waste management varies significantly from country to country, so it is important to check your local regulations. You should be particularly aware of legislation relating to veterinary waste, manures, meat and products from sick animals and fallen stock.

STORAGE OF HAZARDOUS WASTE (7.3.3.13-16, SAC P.30)

Clinical waste includes veterinary waste – national regulations must be followed or in the absence of regulations, guidance on the best option must be sought.

Storage of hazardous waste must take account of the potential exposure of animals and animal products, as well as of people and the environment. It is especially important to ensure that animal feed does not become contaminated. Similarly, care must be taken that hazardous waste does not become included in slurry or manure that is subsequently applied to pasture.

STORAGE OF NON-HAZARDOUS WASTE (7.3.3.17, SAC P.30)

Non-hazardous waste in this context includes manure, slurry and silage. This is covered in the 'manure and silage storage' section of this document on page 4 (Nutrient Management).

WASTE DISPOSAL (7.3.3.20-31, SAC PP.30-31)

Disposal of veterinary waste and expired veterinary medicines

Veterinary waste can be either hazardous or non-hazardous. Infectious waste and contaminated sharps, e.g. needles, should be kept separate from other waste and generally disposed of by high temperature incineration, though this may vary from location to location, and is likely to be covered by legislation, so guidance on this must be sought. Non-hazardous veterinary waste, e.g. gloves and swabs, can usually be disposed of in landfill, though again this may vary, and you should check with local regulations.

Safe disposal of unwanted or expired veterinary medicines is essential to protect farm workers, family members, animals and the environment from accidental exposure. Many veterinarians and manufacturers will accept returns of products, or specialised waste-handlers may operate in this area.

Animal pesticides (e.g. fly treatments, de-wormers) must be disposed of in an identical manner to crop pesticides, usually through specialised waste contractors (see main SAC implementation guide).

Disposal of fallen stock

Regulations vary on disposal of fallen stock, so your local legal requirements must be looked at and complied with.

In Europe, burial of livestock on-farm is not allowed – instead fallen stock must be sent to rendering or incineration plants. Elsewhere, on-farm burial/composting may be allowed, but the SAC requirements 7.3.3.20 - 7.3.3.32 must still be taken into account. These ensure that risks to people and the environment from such disposal is assessed and managed appropriately.

Disposal of plastics

Plastic, especially silage wrapping is a common waste stream on beef and dairy farms. Plastic waste is dealt with more generally in the main SAC implementation guide – recycling schemes for plastic waste are becoming common, but in some countries on-farm burial or disposal through landfill sites will still be the only option.

Links to other sections
Section 2 – Agrochemicals and Fuels (agrochemical storage and waste disposal, manure management)

Future requirement changes/additions to the SAC
7.3.3.13 will read "... clinical **or veterinary** waste"

SECTION 8
SOCIAL AND HUMAN CAPITAL

Social and human capital describes the connection between the farm and both the community and its workforce. It covers quality of life issues, access to, good relations with and protection of farm labour, and strengthening the local community. Most of the issues concerned with social and human capital are generic to farming and are therefore covered in the main SAC implementation guide Section 8. The following section covers some issues that are most relevant to livestock farming.

Key Issues in livestock production
- Worker training (including health and safety)
- Implementation of health and safety procedures for workers
- Long working hours
- Air quality (odour management) for local community

HEALTH AND SAFETY RISK ASSESSMENT – RECOMMENDED COMPONENTS (8.3.3.3, SAC P.35)

An additional area that needs to be recommended for the health and safety risk assessment is zoonoses – diseases that are transferrable from animals to humans. People working with livestock, may be exposed to possible infections, and the risk of this must be assessed and managed. At a minimum this involves providing hand washing facilities for all workers, but may also mean implementing certain hygiene and medical screening practices, e.g.:

- Avoiding contact with animal wastes, carcasses, excretions and offal; but if they must be handled, ensure the workers have the appropriate clothing and equipment, such as aprons, rubber boots, gloves, goggles and other skin protection. As always, this personal protective equipment needs to be regularly maintained or replaced to remain effective. They must also receive adequate training in avoiding such risks; making sure animal wastes don't come into contact with human food and drinking water;
- Avoiding eating raw meats or unpasteurised dairy products (although this is accepted common practice for farmers themselves, unpasteurised products should not be sold or given to farm workers without warnings of possible health risks);
- Treating and disinfecting cuts, abrasions and animal bites immediately;
- Evaluating specific groups of workers with respect to labour related risks and providing appropriate measures of protection. For example, specific measures should be implemented for those with reduced immune competence (such as pregnant women, those undergoing treatment such as cancer therapy and those with chronic diseases).

The section also needs to include assessment of the risk of injuries from animals. Such injuries can be avoided by having proper animal facilities, and training for workers in avoiding such injuries.

These issues also link to requirement 8.3.3.7 (d) "Safe and healthy working conditions will be provided for all employees", and should also be included in health and safety training for workers (requirement 8.3.3.5).

WORKING HOURS (8.3.3.7(b), SAC P.35)

Livestock farming typically involves long working hours. Farmers must be aware of, and comply with, local laws governing working hours for their employees.

COMMUNITY INVOLVEMENT AND NEIGHBOURS (8.3.3.24, SAC P.37)

Clean air is important for everyone, including farming families and the local community. One of the best ways for farmers to be good neighbours is to minimise odour, by making sure barns are kept clean and by ensuring manure storage facilities are designed well.

Certain manure treatments can also reduce odour. For more detail on odour management, see:

- http://www.milkproduction.com/Library/Scientific-articles/Housing/Preparing-an-odor-management-plan/
- http://www.thepoultrysite.com/articles/387/coexisting-with-neighbors-a-poultry-farmers-guide
- http://www.thepigsite.com/articles/1023/methods-and-practices-to-reduce-odor-from-swine-facilities (Although this refers to controlling odour in large feedlot situations, it is an excellent source of general management techniques for odour management)

Links to other sections
Section 2 – Agrochemicals and Fuels (manure management and local community impacts)
Section 11 – Training

Future requirement changes to the SAC
8.3.3.3 will have an additional issue "(n) zoonoses (diseases that can pass from animals to humans) and injuries from interaction with animals – SHOULD"

SECTION 9
ANIMAL WELFARE

This section describes some of the specific ways in which livestock farmers can best provide for their animals' health and welfare. More general advice on complying with the SAC requirements on animal welfare is contained in the main SAC Implementation Guide, and it is important that you refer to this also.

For all SAC requirements on animal welfare, farmers also should bear in mind legislative requirements in their location, as specific laws can vary significantly. Local advice for your particular system and location should also be sought from your veterinarian or adviser.

RECORDS (SECTION 9.1, SAC P.38)

Requirement 9.1.4 refers to the animal health plan. Ideally the health plan should consist of: (1) records of animal diseases that are diagnosed and/or treated on a daily basis, (2) risk assessment on all relevant factors for animal health (e.g. housing and feeding), (3) treatment plans for the most relevant diseases (especially when antibiotics are involved) and (4) preventative measures taken on the farm to achieve good animal health performance. Ideally the health plan should be developed in discussion with the vet (for more detailed advice on the animal health plans see page 23 for cattle, page 26 for pigs and page 31 for poultry).

As well as the four records listed in the SAC, the list should also include records of feed supplements purchased for use on farm. The records should include date, description of the feed including ingredients, quantity, feed supplier, country of origin and batch code. An available feed plan developed for the different production groups and will help to give a more detailed summary of welfare from a dietary perspective.

Direct physical abuse and mental suffering of animals (9.3.2.4, SAC p.39)

Livestock at all stages of production should be handled and managed in a considerate and compassionate manner at all times. There should be no reason for staff to abuse or mistreat animals in their care, any breach should be treated seriously and staff involved should be reported to the relevant authority.

Casualty slaughter

Casualty slaughter of livestock on the farm (due to sickness or injury) should be undertaken in a humane manner and prevent any additional suffering to the animal. Any on-farm slaughter should preferably be done by a veterinarian or a trained and competent member of staff (if local legislation allows).

CATTLE PRODUCTION – DAIRY AND BEEF

Mutilations

Thought should be given to the necessity on individual farms to carry out such tasks as disbudding and castration. Where deemed necessary, such surgical procedures must be kept to a minimum and only be performed by competent, trained personnel. The use of anaesthetics and analgesics, when undertaking surgical procedures is strongly recommended.

The preferred methods for identification of cows are the use of ear tags or ear tattoos. These procedures should be undertaken by competent, trained personnel.

The docking of dairy cow tails is not an acceptable practice, unless undertaken by a veterinarian for welfare reasons (such as injury or infection) and with the use of anaesthetics and analgesics.

Food and water provision (9.3.3.1, SAC p.39)

Feed

Cattle diets should be appropriate for the stage of production and fed in sufficient quantities to maintain the animals in good health whilst maintaining body condition and satisfying their nutritional requirements (lactating dairy cows will have a higher dietary requirement than suckler cows). This can be best regulated and documented in a feed plan. Ideally, the feed plan should detail the type of feed that is provided and the level of ingredients used. The feed plan should also indicate the levels of energy, protein, minerals and fibres in the ration. The feed plan should also contain a section on the nutrition of youngstock and calves.

All ration ingredients and formulations must meet local legislative requirements (e.g. the use of certain animal proteins is banned in the EU).

In extensive systems, pasture on which cattle are kept should be maintained to ensure adequate provision of forage. In situations where pasture cannot be maintained, supplementary feed or forage should be made available. Producers should be aware of any nutrient deficiencies of pasture and supplements provided.

All cattle should have daily access to food (except when required by the veterinarian). Efforts should be made to avoid sudden changes in the type and quantity of feed.

Good cattle nutrition is judged on the basis of:

1. general condition of the cattle (coat, over fat or thin)
2. production and performance (milk yield, food conversion ratio, daily liveweight gain)
3. nutritional disease incidence (such as milk fever, ketosis, laminitis, and bloat)

Calf nutrition

Providing an adequate volume of high-quality colostrum or colostrum replacer is critical to calf health because calves depend on colostrum for immune protection. All calves, whether to be raised as a replacement heifer (for suckler or dairy), veal, or for beef finishing, should receive colostrum or colostrum replacer and be fed in a way that promotes health and reduces the risk of disease. The recommended provision is 2-4 litres (0.5 – 1 gallon) within 2 hours after birth. After receiving immunity through feeding colostrum or colostrum replacer, calves should be fed milk or milk replacer until weaning. Calves should have continuous access to fresh water, or provided water at least twice a day (only if continuous access is impossible and there is no competition), that is free of contaminants or pollutants. Within two weeks after birth, calves to be retained on the farm should be offered a palatable, high-quality ration.

Advice on weaning seems to vary considerably depending on location. We therefore advise you to conform to official local (veterinary) advice for your breed and farming system – this should be sought from your Ministry of Agriculture or similar government department, or university extension service if there is one.

In general the health of calves can be judged by: (1) looking at the general condition of the calf (e.g. colour and shine of the coat) and (2) the percentage of calves that suffer from health problems and/or the number of calves that have been treated with antibiotics or other types of medications.

For additional information on (dairy) calf nutrition use the following links:

- http://www.afbini.gov.uk/blueprint-for-rearing-dairy-origin-calves.pdf - Northern Ireland Department of Agriculture and Rural Development, "Blueprint for Rearing Dairy-Origin Calves"
- http://www.archive.defra.gov.uk/foodfarm/farmanimal/welfare/onfarm/documents/calfsurv03.pdf - UK Department for the Environment, Food and Rural Affairs "Improving Calf Survival"
- http://aciar.gov.au/files/node/740/Dairy%20workshop%20presentation%20-%20Peter%20Wynn.pdf – Calf Management - Faculty of Veterinary Science, University of Sydney

Water

All cattle should have continuous access to a sufficient quantity of clean drinking water, so that they are able to satisfy their fluid intake needs. Equipment for providing water to animals should minimise contamination, and the harmful effects of competition between animals. There should be enough water available for at least 10% of housed cattle to drink at one time. An appropriate number of water sources (natural or man-made) should be available to grazing cattle which are easily accessible. Water troughs should be managed in a way that ensures they are capable of dispensing water and that access is available at all times for example, minimising possible freezing in cold weather and ensuring areas around water troughs do not become water logged.

Animal Feed Purchase and Traceability

The main SAC implementation guide describes the three elements relating to good food and drink provision – access, quality and amount. One way in which to guarantee quality of purchased feed is to ensure feed is supplied by a reputable vendor. In many countries, for example those in the European Union, this is regulated by law. Here, all vendors of animal feed must be registered or approved and have traceability procedures in place. Feed contaminated with aflatoxins and dioxin must not be fed to animals. Aflatoxins and dioxins in feed can cause serious problems as the aflatoxins can pass into the finished product. Ideally all feed should be tested for aflatoxins and dioxin. As a minimum, testing for these hazardous substances should be based on a risk assessment of feed constituents that pose a high risk of contamination. For example; aflatoxins should be tested where raw materials come from tropical areas and dioxins where raw material production is situated close to incineration sites. This can also mean that grazing or harvesting is not possible if dioxin levels are too high in a certain region. If testing of feed is not possible, the testing of meat for aflatoxins and dioxin levels are the minimum standard.

Suppliers of feed should be asked for data on the nutritional quality of the ingredients. A properly designed and verified feed plan should be the assurance for good animal feed purchase and traceability. Water supply and water quality should be included in the feed plan as well.

For additional information on feed plans follow the links:

- http://www.eblex.org.uk/documents/content/returns/brp_b_beefbrpmanual5-feedingsucklercowsandcalvesforbetterreturns.pdf - EBLEX, UK "Better returns Programme feeding suckler cattle and calves
- http://www.dairyco.org.uk/farming-info-centre/feeding/feedingplus.aspx - DairyCo UK- feeding dairy cows

Avoiding competition for food and drink (9.3.3.2, SAC p.39)

With respect to requirement 9.3.3.2 on competition, the method of feeding and provision of water must be designed and placed so as to minimise competition between animals.

Water availability for indoor-housed cattle should be sufficient so that 10% of the herd can drink at one time.
For feeding trough space the following are recommended as the appropriate allowance:

Recommendations for feed trough space:

Weight (kg)	Ration fed	Ad-lib/Self feed
	(centimetres per animal)	
200	45	15
250	45	15
300	50	15
350	50	15
400	55	17
450	55	19
500	55	22
550	55	24
600	60	26
650	65	28
700	70	30
750	75	32

Source: UK Red Tractor Assurance Scheme

Animal environment (9.3.3.3 and 9.3.3.6, SAC p.39)

Cattle should be kept in an environment that takes into account their welfare needs, be designed to protect them from physical and thermal discomfort, fear and distress, and allows them to exhibit natural behaviour.

There are many examples of specific actions that can be taken; some of these are listed below.

These include:

- **Using non-slip flooring** – slipping on floors is a common cause of leg damage. However, floors should not be too rough either, as this can damage feet. Build-up of slurry can also make the floors slippery as well as potentially causing health issues, so cleaning systems should be in place to avoid this.

- **Avoiding sloping floors** – no more than 10% is commonly recommended, as steeper slopes can cause leg problems, slipping and falling.

- **Ensuring slatted floors are suitable for cattle** – for example the gaps should not be wide enough to cause foot injuries.

- **Forming appropriate group sizes**. Barns and lots should not be overstocked so as to prevent competition and stress in the herd and ensure that all cattle can be accessed by the stockman. Age, sex, liveweight and behavioural needs of the animals, as well as environmental factors, should be taken into consideration when determining group size. Bulls raised for slaughter should ideally be kept in groups of in excess of 20 animals. Steers/heifers should ideally be kept in groups of less than 40 animals.

- **Providing enough space for all animals to lie in comfort at the same time**, and to stand up and move freely and without injuring themselves. The size, shape and weight of the animal needs to be considered when designing lying places.

- **Ensuring lying areas that are dry and clean**. Where bedding is provided it should be checked daily and replenished to ensure that all animals are physically comfortable, clean and dry.

- **Ensuring lying areas are appropriate and sufficient to allow cattle to lie down for 10-14 hours a day** (which is especially important for lactating dairy cows).

- **Ensuring that sanitation programmes are in place that results in clean animals**. Removing manure on a regular basis will decrease ammonia levels as well. For indoor housing, the internal surfaces should be made of materials that are easy to disinfect and clean.

- **Ensuring drainage is appropriate to reduce the build-up of stagnant water** and the potential for damp bedding.

- **Ensuring light levels inside housing are adequate for animals to feed and behave normally**. Light levels should be sufficient to allowing inspection of the animals by the stockman.

- **Ensuring ventilation is sufficient** so that cattle do not suffer from cold or heat stress.

- **Ensuring open lots or sites for grazing are chosen carefully**. Fields should be free draining and have adequate shelter.

Additional requirements for dairy cows

- Actions should be taken to ensure that cows do not stand for long periods of time waiting to get milked. Long standing times will have a negative impact on hoof health and decrease the efficiency of production.

The priorities for protecting cattle from physical discomfort and stress, and enabling them to perform natural behaviour may differ depending on the type of facility.

Some examples are listed below:

- Stanchion/tie stalls:
  - Daily exercise for animals
  - Ability for animals to stand and lie down
  - Space to stretch, eat, drink, urinate and defecate comfortably
  - Routine manure removal
- Free-stalls:
  - Routine removal and replacement of soiled bedding
  - Adequate time for rest, exercise and feed and water consumption
  - Size of stalls and provision of adequate lunge space
  - Provision of air movement and/or cooling systems for animal comfort
- Open lot and pastures:

- Appropriate drainage to avoid situations in which animals stand in mud after rain
- Access to shade during hot periods and windbreaks during cold periods
- Management in arid areas should be sufficient to avoid excessive dust
- In open lots, routine manure removal surrounding feeding areas

Space recommendations

Cubicles

For cubicle housing there should be a minimum of one cubicle per animal (ideally there should be 5% more cubicles than animals).

Recommended cubicle dimensions:

Type of animal	Liveweight (kilos) of animal	Dimensions of cubicle	
		Length (m)	Width (m)
Cows	400-600	2.4	1.15
	Over 600	2.5	1.20
Calves, youngstock and beef cattle	75-150	1.2	0.6
	150-250	1.5	0.75
	250-375	1.7	0.90
	Over 375	2.1	1.10

Source: UK Red Tractor Assurance Scheme

Loose housing

All animals should have the space to move around freely, and lie down and rise without difficulty; slatted lying areas must not be used for dairy cows.

Guidelines for space allowance:

Type of animal	Liveweight (kilos)	Bedded areas	Solid floors (m^2) *(includes feeding & loafing areas)*	Slatted floor (m^2)
Dairy cows	500	4.25	5.85	
	600	5.00	6.80	
	700	5.75	7.75	
Suckler cows	400	3.50	4.90	2.50
	500	4.25	5.85	2.75
Calves, youngstock and beef cattle	200	2.0	3.00	1.10
	300	2.75	3.95	1.50
	400	3.50	4.90	1.80
	500	4.25	5.85	2.1
	600	5.00	6.80	2.3

Source: UK Red Tractor Assurance Scheme

The suitability of the animal environment can be judged best by looking at the health and welfare of the cows (e.g. locomotion score and skin lesions). In principle high levels of animal health and welfare can be achieved in all systems. Farm management is the key success factor in this process. This implies that farm workers and supplier employees (responsible for visiting the farm) should be able to monitor and score the welfare and health status of individual cows and the herd. Usually courses are in place to help the farmers learn this.

For more information on cattle environments and facilities follow the links:

- http://thedairylandinitiative.vetmed.wisc.edu/
- http://www.uwex.edu/ces/dairymod/index.cfm
- http://extension.psu.edu/courses/beef/basic-production-practices/overview-of-the-beef-industry

Dr Temple Grandin, Associate professor of Animal Sciences at Colorado State University has conducted research into the design of cattle facilities and how to minimise stress on the animal. These guides give specific information and links to additional information.

Non-slip flooring
http://www.grandin.com/design/non.slip.flooring.html

Livestock handling systems
http://www.grandin.com/design/design.html

Handling and transport
http://grandin.com/behaviour/transport.html

Calving facilities and calf environment

A clean, dry, well-lit, well-ventilated calving area has many health benefits for mother and calf at the time of birth. For indoor calving ideally the cow should be housed and calved on their own, with pens being cleaned out and disinfected between each calving. Areas used for calving should not be used for sick animals due to the risk of contamination and infection. For outdoor calving a maternity paddock should ideally be available which can be easily inspected by staff so assistance can be provided to the cows at calving. In extensive systems where a maternity paddock is not possible, in-calf cows should be regularly checked to ensure no difficulties in calving occur.

Housed or penned calves and young stock should be given adequate space to stand, lie down and turn around without difficulty as well as being able to groom themselves and stretch their limbs. They should also be protected from extreme weather conditions, including high and low temperatures, draughts, and rain.

In group housing each calf with a liveweight upto 150kg should have at least 1.5m^2 of space, between 150kg and 220kg at least 1.7m^2 and over 220kg 1.8m^2 (source: COUNCIL DIRECTIVE 2008/119/EC – Europe).

Routine early weaning of suckled beef calves should be avoided as this can reduce their resistance to disease. Weaning is recom-

mended between six and nine months of age. Early weaning is acceptable where the cattle are suffering from poor health, body condition or welfare. Weaned calves should have access to fresh forage and a concentrate mix.

Management – requirement for training (9.3.3.4, SAC p.39)

This requirement covers the need for training of farmers and stock-keepers in all aspects of dairy and beef farming.

Cattle handling, movement and transportation

Since cattle are often subject to movement and transportation, employees should be properly trained to handle cattle at all stages of production, keeping stress to the animal at a minimum. The consequences of inhumane handling should be known to employees.

Handling facilities should be well-maintained and free of objects such as broken boards or rails that may cause bruising. The transit of cattle should be safe, humane, and comfortable in order to ensure their health, quality and value.

For information and advice on livestock transport please view the 'Unilever Livestock Transport and Slaughter Implementation Guide'.

Animal health plan (9.3.3.7, SAC p.39)

Animal health plans for all cattle should include:

- Calf health and management protocols
- Monitoring of cattle health e.g. monitoring of locomotion, body condition and lesions. Monitoring for these issues enables early identification of problems and therefore early intervention to address underlying factors. Such monitoring can link to the requirement for continuous improvement, monitoring and benchmarking (section 9.2).
- Treatment protocols for regularly encountered conditions (Including chemicals, drugs, medications, withdrawal period etc.)
- Recommended vaccination protocols (when applicable)
- Recommended parasite controls
- Protocol for health checks (for all stages of production)
- Mortality records, including cause of death
- Quarantine procedures
- Biosecurity procedures
- A risk assessment should be part of the health plan, including discussion surrounding all possible risks for animal health (e.g. feeding, housing, management).

The health plan should be reviewed and amended accordingly at least once a year.

Additional requirements for dairy cows:

- Milk yield and milk quality are also useful indicators of cow health, so monitoring of milk yield and quality parameters should also be part of the health plan (somatic cell count, bactoscan and TBC as well as nutritional indicators such as fat and protein).

For additional information on monitoring and management systems follow the links:
http://www.defra.gov.uk/publications/files/pb6491-cattle-scoring-020130.pdf - Photographic guides for monitoring are available such as the UK government guide to Body Condition Scoring:

Further information surrounding health planning can be found at:

- http://www.eblex.org.uk/documents/content/returns/brp_b_leaflet_-_farm_herd_planning.pdf - herd health planning
- http://www.dairyco.org.uk/technical-information/animal-health-welfare/lameness/husbandry-prevention/mobility-scoring/ - Locomotion scoring
- http://www.vetmed.wisc.edu/dms/fapm/fapmtools/6lame/New5point_locomotionscoreguide.pdf - US University Extension Service Guide to Locomotion Scoring
- http://www.vetvice.com

Your veterinarian may be able to provide you with similar guides, so remember to ask as part of the health planning process.

Calf Health

Since calves are more susceptible to a number of diseases, good hygiene is particularly important, as is monitoring of their general health. Your vet will be able to advise further. Procedures carried out on calves should be, where applicable be under anaesthesia (e.g. dehorning). The number of procedures carried out on calves (like dehorning, castration) should be kept to a minimum (for additional advice surrounding procedures see 'Mutilations' page 19).

Calves should be provided with food that contains sufficient iron to ensure a blood haemoglobin level of at least 4.5mmol/litre (by providing 40 to 50 mg Fe/kg supplied in feed). A minimum daily ration of 100g of fibrous food should be provided for every calf over 2 weeks. This should be raised in line with growth to 250g by 20 weeks old.

PIG PRODUCTION

Mutilations

Thought should be given to the necessity on individual farms to carry out such tasks as tail docking, teeth clipping and castration.

Tail docking and teeth clipping should not be carried out routinely: only being carried out where there is evidence on the farm that injuries to pigs have occurred (e.g. injuries to sows teats, ear/tail biting) or are likely to occur as a result of not tail docking or tooth clipping.

Where deemed necessary such surgical procedures must be kept to a minimum and only be performed by competent, trained personnel. If castration is deemed necessary; it should ideally take place within 72 hours of birth and an anaesthetic and prolonged pain relief should be administered.

Other tasks such as boar tusk removal, should only be carried out when by not doing so would cause injury or distress.

Food and water provision (9.3.3.1, SAC p.39)

Feed

Pig diets should be appropriate for the stage of production: fed in sufficient quantities to maintain the pigs in good health while maintaining body condition and satisfying their nutritional requirements.

The diets of dry and lactating sows should meet health requirements and avoid nutritional or metabolic problems. This can be best regulated and documented in a feed plan. Ideally, the feed plan should detail the type of feed that is provided and the level of ingredients used. The feed plan should also indicate the levels of energy, protein, minerals and fibres in the ration.

The feed plan ideally should also contain a section on the nutrition of pigs during the rearing and finishing periods. Good pig nutrition is judged on the basis of: (1) general condition of the pigs, (2) production performance.

Procedures should be in place to minimise the contamination of stored feeds. All ration ingredients and formulations should meet local legislative requirements (e.g. the use of mammalian and avian proteins in diets is banned in some countries).

All pigs should have daily access to food (except when required by the attending veterinarian). Efforts should be made to avoid sudden changes in the type and quantity of feed.

Water

All pigs should have continuous access to a sufficient quantity of clean drinking water so that they are able to satisfy their fluid intake needs. Equipment for providing water to animals should minimise contamination and the harmful effects of competition between animals. Water troughs, bowls and nipples should be managed in a way that ensures they are capable of dispensing water at all times.

Ideally, provision of water should take into consideration the following: the total volume available; sufficient flow rate for the type of animal (e.g. some classes of stock may not spend a long time taking water); the method of provision (e.g. the type of drinker); and its accessibility to all the animals in a group. Pig keepers should be aware of the daily water requirement of the animals under their care.

Daily requirements and minimum flow rates for pigs of different weights and stages:

Weight of Pig (Kg)	Daily Requirement (litres)	Minimum flow rate through nipple drinkers (litres/min)
Newly weaned	1.0 - 1.5	0.3
Up to 20kgs	1.5 – 2.0	0.5-1.0
20kgs-40kgs	2.0 - 5.0	1.0-1.5
Finishing Pigs up to 100kgs	5.0 - 6.0	1.0-1.5
Sows & Gilts: pre-service	5.0 - 8.0	2.0
Sows & Gilts: in-lactation	15 – 30	2.0
Boars	5.0 - 8.0	2.0

Source: Department for Environment, Food and Rural Affairs (DEFRA, UK)

Where nipple drinkers are used, ideally a drinking point should be available for each ten pigs on rationed feeding. On unrestricted feeding, one nipple drinker should provide adequate supply for 15 pigs given sufficient flow rates.

Where trough systems are used: pigs up to 15 kg should have access to 0.8 cm per head; pigs in the 15-35 kg liveweight range should have access to 1.0 cm per head; pigs over 35 kg should have access to 1.3 cm of trough space per head.

In wet feed systems, pigs should have access to a separate supply of fresh water.

Water troughs, bowls and nipples should be kept clean and managed in a way that ensures they are capable of dispensing water at all times.

Animal Feed Purchase and Traceability

The main SAC implementation guide describes the three elements relating to good food and drink provision – access, quality and amount. One way in which to guarantee quality of purchased feed is to ensure feed is supplied by a reputable vendor. In many countries, for example those in the European Union, this is regulated by law. Here, all vendors of animal feed must be registered or approved and have traceability procedures in place. Feed contaminated with aflatoxins and dioxin must not be fed to animals. Aflatoxins and dioxins in feed can cause serious problems as the aflatoxins can pass into the finished product. Ideally feed should be tested for aflatoxins and dioxin. As a minimum, testing for these hazardous substances should be

based on a risk assessment of feed constituents that pose a high risk of contamination. For example; aflatoxins should be tested where raw materials come from tropical areas and dioxins where raw material production is situated close to incineration sites. This can also mean that grazing or harvesting is not possible if dioxin levels are too high in a certain region. If testing of feed is not possible, the testing of meat for aflatoxins and dioxin levels are the minimum standard.

Suppliers of feed should be asked for data on the nutritional quality of the ingredients. A properly designed and verified feed plan should be the assurance for good animal feed purchase and traceability. Water supply and water quality should be included in the feed plan as well.

Avoiding competition for food and drink (9.3.3.2, SAC p.39)

With respect to requirement 9.3.3.2 on competition, the method of feeding and provision of water should minimise the contamination of feed and water and should minimise bullying: restricted feeding in troughs should enable all pigs to feed simultaneously.

If a floor feeding system is used, feed should be scattered over a wide area to reduce the potential for bullying.

Mechanical and automated (e.g. Electronic Sow Feeders) feeding systems should be monitored to ensure procedures are in place in the event of a breakdown.

Animal environment (9.3.3.3 and 9.3.3.6, SAC p.39)

Pigs should be kept in an environment that takes into account their welfare needs, be designed to protect them from physical and thermal discomfort, fear and distress, and allows them to exhibit natural behaviour.

There are many examples of specific actions that can be taken with respect to the pig farm environment, to protect pigs from physical discomfort and stress, and enable them to perform natural behaviour. These include:

- **Using non-slip flooring** – slipping on floors is a common cause of leg damage. However, floors should not be too rough either, as this can damage feet. Build-up of slurry can also make the floors slippery as well as potentially causing health issues, so cleaning systems should be in place to avoid this.

- **Avoiding sloping floors** – no more than 10% is commonly recommended, as steeper slopes can cause leg problems, slipping and falling.

- **Ensuring slatted floors, where used, are suitable for pigs** – for example the gaps should not be wide enough to cause foot injuries.

- **Ensuring housing for all classes of stock** (including entire males) is within sight and sound of other animals and includes an exercise area.

- **Providing all housed pigs with lying areas that are dry and clean**. Where bedding is provided it should be checked daily and replenished to ensure that all animals are physically comfortable and dry.

PIGS

- **Accommodation used for pigs should allow each pig to: stand up, lie down and rest without difficulty** while maintaining a comfortable temperature and allowing enough space to allow pigs in the group to lie down at the same time. Stocking density guidance: 0.40m^2/pig (of unobstructed floor space) where the average pig weight is >30kg and <50kg; 0.65m^2/pig where the average pig weight is >85kg; and 1.00m^2/pig where the average pig weight is >110kg. Mature sows should be given a minimum total floor area of 3.5m^2/sow, and 2.5m^2/gilt for first and second parity animals.

- **The housing of sows and gilts in groups**, except during the period between 7 days before the predicted day of farrowing and the day on which the weaning of piglets (including any piglets fostered) is complete.

- **Ensuring manure is removed on a daily routine basis**, and that sanitation programmes are in place that result in clean animals. Removing manure on a regular basis will decrease ammonia levels as well.

- **Ensuring light levels inside housing are adequate for animals to feed and behave normally**.

- **Ensuring ventilation is sufficient**: pigs must be provided with an environment which allows them to regulate their temperature so that they can avoid heat or cold stress.

- **Supplying pigs with permanent access to a sufficient quantity of material such as straw, hay, wood, sawdust, mushroom compost, peat** (or a mixture of such which does not adversely affect the health of the animals), to enable proper investigation and manipulation activities.

Where pigs are kept in outdoor husbandry systems, stock/breeds of pig should be selected for their suitability for outdoor conditions.

Sites for outdoor production should be chosen carefully: sites with free draining soils, in low rainfall areas with low frost incidence are most suitable. Adequate shelter (to protect the pigs in hot or cold weather conditions) should be provided for all pigs which are outdoors.

A stocking density guideline of 25 sows per ha overall is considered acceptable on suitable sites.

The suitability of the animal environment can be judged best by looking at the health and welfare of the pigs (e.g. body condition, lesions, fight marks etc.). Farm management is a key success factor in providing for the health and welfare of the pigs. Therefore, it should be possible to monitor and score the health and welfare of individual animals and the herd by viewing the pigs and the facilities.

Farrowing, piglet environment and facilities

The feeding management of sows and gilts should ensure they are in suitable body condition at the time of farrowing: a target score of 3.5 -4 should be aimed for.

Farrowing accommodation should be constructed and be sufficiently big enough to allow sows to rise up and lie down again without difficulty. Additionally, the space available to sows in farrowing crates should be long enough to allow sows to lie in a fully outstretched comfortable position, which will depend on the weight of the sow. Ideally sows should not be placed in crates more than five days before the expected farrowing date.

Nesting material should be provided, whenever possible, particularly in the 24 hours prior to farrowing to enable sows to exhibit nest-building behaviour.

If necessary, piglets should be provided with a source of supplementary heat, together with a solid, dry and comfortable lying area away from the sow where all of them can rest at the same time. In farrowing pens where sows are kept loose, some means of protecting piglets should be installed, e.g. creep rails.

Unless the health and welfare of the sow or piglets is being compromised, piglets should not be weaned from the sow at less than 28 days.

At weaning, piglets should be moved into specialised housing which has previously been emptied of pigs, cleaned and disinfected.

Management – requirement for training (9.3.3.4, SAC p.39)

This requirement covers the need for training of farmers and stock-keepers in all aspects of pig farming, including insemination, pregnancy care and farrowing, management practices, pig handling, movement and transportation (see next paragraph) as well as dealing with sick and fallen or culled stock.

Pig handling, movement and transportation

Since pigs are often subject to movement and transportation, employees should be properly trained to handle pigs at all stages of production keeping stress to the animal at a minimum. The consequences of inhumane handling should be known and enforced.

The transit of pigs should be safe, humane, and comfortable in order to ensure their health, quality and value. For information and advice on livestock transport please view the 'Unilever Livestock Transport and Slaughter Implementation Guide (red meat)'.

Animal health plan (9.3.3.7, SAC p.39)

Animal health plans for sows, piglets and rearing/finishing stock should include, as a minimum: Identified diseases; treatments to be administered for regularly encountered conditions (Including chemicals, drugs, medications, pre-harvest period etc.); recommended vaccination protocols (when applicable); recommended parasite controls: protocol for the treatment of injurious behaviour; protocol for pre delivery health checks; quarantine procedures; biosecurity procedures.

Besides the monitoring of disease incidences, a risk assessment should be part of the health plan. In this risk assessment all possible risks for animal health (e.g. feeding, housing, management) are discussed.

Procedures carried out on pigs should be, where applicable (e.g. castration) under anaesthesia. The number of procedures carried out on piglets (like teeth clipping, tail docking) should be kept to a minimum (for additional advice surrounding procedures see 'Mutilations' page 24).

POULTRY PRODUCTION – POULTRY MEAT (BROILERS) AND EGGS (LAYERS)

Mutilations

It should not be necessary to use any mutilations for growing broilers.

In all egg production systems there are on-going challenges with feather pecking and cannibalism during the rearing and laying phases. Best practice is considered as not beak trimming. If beak trimming is deemed necessary, and recommended by a veterinary surgeon, then it should ideally be performed at one day old using an infra-red system.

There are various management techniques that should be used to reduce the need for beak trimming. These include:

- Ensuring synchrony of the rearing and laying environments for the birds.
  - Lighting (duration, intensity, pattern)
  - Water
  - Feed
  - Housing
- Avoiding barren environments – providing enrichment to encourage natural behaviour
- Reducing stocking density
- Genetics – understanding differences between and within breeds
- Rapid recognition and treatment of issues
- Consistent nutrition / ration formulation
- Lighting – managing intensity, avoiding shafts of light entering a building
- Effective control of parasites such as red mite.

Food and water provision (9.3.3.1, SAC p.39)

Feed

Birds should be fed ad-libitum and diets should be specifically formulated to satisfy the nutritional requirements of the type of bird that is being reared. Feed should be presented in a form that is suitable for the age and type of bird. Feed should be sourced from a purpose built feed mill that operates to an approved local scheme (e.g. The Universal Feed Assurance Scheme, UFAS http://www.agindustries.org.uk/content.output/93/93/Trade%20Assurance/Trade%20Assurance%20Schemes/UFAS.mspx). Details of the key ration components should be detailed in the farm feed plan e.g. energy, protein, key minerals and amino acids.

Procedures should be in place to minimise the contamination of stored feeds. All ration ingredients and formulations should meet local legislative requirements (e.g. the use of mammalian / avian proteins and 'growth promoters' in diets is banned in some countries). Diets should be free from hormones and, if fishmeal is used, it should be fed at levels that do not result in the tainting of finished product.

For further information regarding the sustainability of feed, please refer to section 12.

For broilers it is preferable that houses are equipped with 2 silos to ensure that withdrawal periods of coccidiostats and other treatments can be effectively managed (requirement 9.3.2.5).
Prior to depopulation of houses feed should not be withdrawn from the birds for more than 12 hours before the time of slaughter.

Water

Birds should be provided with continuous access to fresh, potable water.

It is essential that high standards of water quality are maintained. Drinkers should be hygienically managed. Water quality should be periodically checked, with samples taken from the drinker points in the houses. As a guide, water quality should be fit for human consumption, irrespective of the source.

Recommended standard limits for potable water:

Parameter	Unit	Test remarks	Requirement	Methods
Total Bacteria	per ml	6.9×10^2	1.0×10^2	Pour Plate
Coliform	per 100 ml	nil	nil	Filtration
E. Coli	per 100 ml	nil	nil	Filtration
Salmonella sp	per 100 ml	negative	negative	Filtration

Source: World Health Organisation

Water meters should be fitted in all houses and the amount of water consumed should be monitored on a daily basis. Changes in water consumption provide an early indication of health issues within flocks.

A 24 hour supply of water should be available on site or there should be provision made to achieve this e.g. the use of a dedicated bowser.

Typical daily water consumption for layers (litres per 1000 birds) at 21°C:

Production Stage	Age/Rate of Production	Water Consumption
Layer pullet	4 weeks	100
	12 weeks	160
	18 weeks	200
Laying hens	50% production	220
	90% production	270

Source: Poultry CRC - http://www.poultryhub.org/nutrition/nutrient-requirements/water-consumption-rates-for-chickens/

Typical daily water consumption for broilers at 20˚C (litres per 1000 mixed sex birds):

Age (weeks)	1	2	3	4	5	6	7	8
Water Consumption	65	120	180	245	290	330	355	370

Source: Poultry CRC - http://www.poultryhub.org/nutrition/nutrient-requirements/water-consumption-rates-for-chickens/

Animal Feed Purchase and Traceability

The main SAC implementation guide describes the three elements relating to good food and drink provision – access, quality and amount. One way in which to guarantee quality of purchased feed is to ensure feed is supplied by a reputable vendor. In many countries, for example those in the European Union, this is regulated by law. Here, all vendors of animal feed must be registered or approved and have traceability procedures in place. Feed contaminated with aflatoxins and dioxin must not be fed to animals. Aflatoxins and dioxins in feed can cause serious problems as the aflatoxins can pass into the finished product. Ideally feed should be tested for aflatoxins and dioxin. As a minimum, testing for these hazardous substances should be based on a risk assessment of feed constituents that pose a high risk of contamination. For example; aflatoxins should be tested where raw materials come from tropical areas and dioxins where raw material production is situated close to incineration sites. This can also mean that grazing or harvesting is not possible if dioxin levels are too high in a certain region. If testing of feed is not possible, the testing of meat for aflatoxins and dioxin levels are the minimum standard.

Suppliers of feed should be asked for data on the nutritional quality of the ingredients. A properly designed and verified feed plan should be the assurance for good animal feed purchase and traceability. Water supply and water quality should be included in the feed plan as well.

Avoiding competition for food and drink (9.3.3.2, SAC p.39)

With respect to requirement 9.3.3.2 on competition, the method of feeding and provision of water should minimise the contamination of feed and water and minimise competition.

Feed: Pan type feeding systems are preferable. Sufficient feed space should be provided according to the recommendation of the equipment manufacturer.

Water: Nipple drinker systems are preferable, although bell drinkers may be used. Sufficient drinking space should be provided according to the recommendation of the equipment manufacturer. Drinkers must be positioned at the correct height for the size of the birds.

Mechanical and automated feeding / watering systems should be monitored and procedures should be in place in the event of a breakdown.

Animal environment (9.3.3.3 and 9.3.3.6, SAC p.39)

Chickens should be kept in an environment that takes into account their welfare needs, be designed to protect them from physical and thermal discomfort, fear and distress, and allows them to exhibit natural behaviour.

Housing

Buildings should provide a safe, hygienic and comfortable environment for the birds. All surfaces within the poultry house should be easily cleanable, including walls, floors, ceilings and pen divisions. The fabric of the building should provide a weather-proof and vermin-proof environment.

Temperature and Relative Humidity

Systems should be in place to maintain a suitable temperature that is appropriate for the age and type of bird being housed. Supplementary heating and cooling systems should be available that are capable of maintaining the optimal temperature in all climatic conditions likely to be encountered throughout the year. In hot weather, houses may switch to a tunnel ventilation system or use misting / cooling systems.

The level of Relative Humidity in the poultry house should also be monitored and controlled. Best practice is thought to be the provision of a Relative Humidity between 50 and 70%.

The box below describes legislation relating to temperature and humidity within the EU:

COUNCIL DIRECTIVE 2007/43/EC of 28 June 2007, laying down minimum rules for the protection of chickens kept for meat production states:

ANNEX II - REQUIREMENTS FOR THE USE OF HIGHER STOCKING DENSITIES

Requirements for the holdings — control of environment parameters

3. The owner or keeper shall ensure that each house of a holding is equipped with ventilation and, if necessary, heating and cooling systems designed, constructed and operated in such a way that:

(b) the inside temperature, when the outside temperature measured in the shade exceeds 30°C, does not exceed this outside temperature by more than 3°C;

(c) the average relative humidity measured inside the house during 48 hours does not exceed 70% when the outside temperature is below 10°C.

Air Quality
The ventilation system should control the levels of noxious gases, including ammonia, carbon dioxide and carbon monoxide. Typical standards include:

Scheme	CO_2 (ppm)	CO (ppm)	NH_3 (ppm)
EU Legislation for increased densities – see Stocking Density below	3,000		20
RSPCA Broilers	5,000	50	15
RSPCA Layers	5,000	50	25
HSE Long term exposure for personnel	5,000	30	25

Lighting
A lighting programme should be in place that is appropriate to the production method, age and physiological requirements of the birds. This programme should define both the duration of the light / dark periods and the intensity of light provided. The source of light may be either natural (through open sided houses or via windows) or artificial, or a combination.

Programmes should comply with local legislation. Within every 24 hours there must be a period of darkness irrespective of age and production system.

The box below describes legislation relating to lighting programmes for broilers within the EU:

COUNCIL DIRECTIVE 2007/43/EC of 28 June 2007, laying down minimum rules for the protection of chickens kept for meat production states:

ANNEX I - REQUIREMENTS APPLICABLE TO HOLDINGS

6. All buildings shall have lighting with an intensity of at least 20 lux during the lighting periods, measured at bird eye level and illuminating at least 80% of the useable area. A temporary reduction in the lighting level may be allowed when necessary following veterinary advice.

7. Within seven days from the time when the chickens are placed in the building and until three days before the foreseen time of slaughter, the lighting must follow a 24-hour rhythm and include periods of darkness lasting at least six hours in total, with at least one uninterrupted period of darkness of at least four hours, excluding dimming periods.

There is no specific legislation relating to lighting programmes for egg layers but typical guidelines are:

- Over the first seven days (from day old) the day length should be reduced from 23 hours to 9 / 10 hours. Intensity is typically reduced from 20 lux to 5 – 10 lux.
- From week 2 to week 15 – 16, the day length is maintained at a constant length (9 / 10 hours).
- From week 15 – 16 the day length is increased to a maximum of 14 / 16 hours to bring the birds into lay and maintain egg production.

Lighting levels in laying houses tend to be lower than in broiler houses to discourage pecking, but the RSPCA Freedom Food standard suggests a minimum of 10 lux.

It is good practice to use dawn and dusk simulation when lights are switched on and off in a poultry house. This reduces levels of stress within flocks. This can be achieved by using automated systems which gradually lower or raise the light intensity over a period of time (typically 15 – 20 minutes), by switching rows of lights on / off sequentially, or by utilising the natural dawn and dusk in open sided / windowed housing systems.

Bedding
In deep litter systems the floor should be completely covered in litter to maintain dry and friable bedding. This should provide an appropriate environment for the birds that reduces the likelihood of hock burn, pododermatitis and cleanliness issues, and encourages dust bathing and other natural behaviours. The material used should be absorbent and safe. Typically materials such as woodshavings, chopped straw and rice hulls are used. Used litter should be disposed of in a responsible manner, in accordance with the waste management plan for the farm (requirement 7.3.3.1).

Stocking Density
Stocking density (space allowance) should comply with local legislation and take into account the local climate. Specific stocking densities will depend on the type of bird being reared (broiler / layer) and the production system (intensive / extensive).

Examples of typical stocking densities are:

System	Production Method	Stocking Density (inside)	Stocking Density (outside)
Broiler	Standard	**Max 42 kg / m^2	N/A
	High Welfare Indoor	30 kg / m^2	N/A
	Free Range	27.5 kg / m^2	1 m^2 / bird
Pullet Rearing – (Eggs)	Floor	***21kg / m^2	N/A
	*Cage	***250 cm^2 / kg	N/A
Egg Layer	*Enriched Cage	750 cm^2 / bird	N/A
	Barn	1,100 cm^2 / bird	N/A
	Free Range	1,100 cm^2 / bird	1 m^2 / bird

** Unilever is working towards sourcing all its eggs from cage-free systems – this is an interim reference only.*
*** Density for EU broiler production is now defined in law and depends on the facilities / farm performance (see below). In hot climates the stocking density might typically be reduced to 28–32 Kg / m^2*
**** Guideline only – legislation for layers only applies in the laying phase*

The box below describes legislation relating to stocking density for broilers within the EU:

COUNCIL DIRECTIVE 2007/43/EC of 28 June 2007, laying down minimum rules for the protection of chickens kept for meat production states:

Article 3

2. Member States shall ensure that the maximum stocking density in a holding or a house of a holding does not at any time exceed 33 kg/m^2.

3. By way of derogation from paragraph 2, Member States may provide that chickens be kept at a higher stocking density provided that the owner or keeper complies with the requirements set out in Annex II, in addition to the requirements set out in Annex I.

4. Member States shall ensure that, when a derogation is granted under paragraph 3, the maximum stocking density in a holding or a house of a holding does not at any time exceed 39 kg/m^2.

5. When the criteria set out in Annex V are fulfilled, Member States may allow that the maximum stocking density referred to in paragraph 4 be increased by a maximum of 3 kg/m^2.

Thinning

Thinning is commonly used within some regions of Europe to maximise productivity. However, this practice does have disadvantages for the birds left after thin, including:

- Necessity to withdraw feed and feed treatments e.g. coccidiostats, from all birds
- Disruption of lighting programme
- Stress due to the proximity of machinery and personnel
- Risk of disease introduction

For these reasons best practice is considered not to thin and if absolutely necessary it should only be carried out once per flock.

N.B. It is accepted that it may be necessary to thin in cases of unexpected hot weather to avoid heat stress.

Enrichment

For broiler production and the rearing of replacement egg layers in deep litter, there is no legislation relating to the provision of enrichment, but it is considered to be a key element of ensuring birds can express natural behaviour. In laying systems enrichments are also an essential tool in reducing the likelihood of feather pecking.

Typical enrichments include:

- Broilers: Perches, Pecking objects, Bales of straw / wood shavings
- Replacement Layers: Perches, Strings and other pecking objects, Bales of straw / wood shavings

For egg layers, within the EU there is specific legislation relating to the design of enriched cages, which must include:

- A nesting area
- Litter such that pecking and scratching are possible
- Appropriate perches allowing at least 15 cm per hen
- A feed trough which may be used without restriction must be provided. Its length must be at least 12 cm multiplied by the number of hens in the cage
- Each cage must have a drinking system appropriate to the size of the group; where nipple drinkers are provided, at least two nipple drinkers or two cups must be within the reach of each hen
- To facilitate inspection, installation and depopulation of hens there must be a minimum aisle width of 90 cm between tiers of cages and a space of at least 35 cm must be allowed between the floor of the building and the bottom tier of cages
- Cages must be fitted with suitable claw-shortening devices

In outdoor systems the quality of the range area is as important as the quantity of space provided. Cover, such as shrubs, trees and man-made shelters will encourage ranging behaviour. Sites for outdoor production should be chosen carefully e.g. sites with free draining soils are preferable.

Alarm Systems

Poultry houses should be equipped with alarm systems that are capable of alerting the stock-keeper to problems. Alarms are typically used to alert the stockman to: high and low temperatures, power failure and, in some cases, failure of water supply.

Farms should also be equipped with a generator that is capable of running the entire site in the event of a failure in electric supply. On broiler farms it is good practice that the generator starts automatically, especially if the site is not continuously manned.

Alarms and generators should be tested regularly and records maintained.

Management – requirement for training (9.3.3.4, SAC p.39)

This requirement covers the need for training of farmers and stock-keepers in all aspects of poultry farming, including management practices, bird handling, movement and transportation (see next paragraph) as well as dealing with sick and injured stock.

Poultry handling, movement and transportation

Employees should be properly trained to handle birds at all stages of production keeping stress to a minimum. The consequences of inhumane handling should be known and enforced.

The transit of birds should be safe, humane, and comfortable in order to ensure their health, quality and value. For information and advice on livestock transport please view the 'Unilever Livestock Transport and Slaughter Implementation Guide (Poultry)'.

Animal health plan (9.3.3.7, SAC p.39)

Health and welfare plans for poultry should include, as a minimum: Identified diseases; treatments to be administered for regularly encountered conditions (Including chemicals, drugs, medications, pre-harvest period etc.); recommended vaccination protocols (when applicable); recommended vermin and parasite controls: protocol for the treatment of injurious behaviour; protocol for pre delivery health checks; quarantine procedures; biosecurity procedures.

In broiler systems, stock-keepers should run a proactive programme to maximise the leg health of the flock. They should be trained to recognise signs of abnormal gait and proactively cull birds to prevent any unnecessary suffering.

Besides the monitoring of disease incidences, a risk assessment should be part of the health plan. In this risk assessment all possible risks for animal health (e.g. feeding, housing, management) are discussed.

Antibiotics are an essential tool in treating disease outbreaks and maximise the health and welfare of flocks. However antibiotics must be used responsibly and only if prescribed by a veterinary surgeon. Products, or equivalents products e.g. fluoroquinolones that can be used to treat human disease, should be avoided whenever possible. The animal health plan must also take into account the likely development of resistance to antibiotics.

Future requirement changes to the SAC
9.1.5 needs to be added to the list of records kept "Records of feed supplements – MUST" add after food and drink provision "All producers should develop a feed plan – SHOULD" and encouragement of grazing wherever this is possible (as they are able to express natural behavior in this way).

SECTION 10
VALUE CHAIN AND LOCAL ECONOMY

Key Issues in livestock production
- Access to economic information and tools
- Profitability of livestock farms (in certain regions)
- Dealing with commodity and price fluctuations

MEASURING PROGRESS (10.3.2.1)

The metric 'Produce more with less' relates to the issue of using scarce agricultural land resources in a productive way.

Yield per hectare of land for livestock production clearly differs between production systems; therefore measuring livestock production in terms of land use is far more complicated than for crops.

Livestock production is affected by many factors including animal genetics, production system (intensive or extensive), climate, available resources (feed), health, welfare and management. There are measures for monitoring productivity, such as daily liveweight gain, feed conversion ratio, young reared per adult, feed consumption. But these measures are clearly affected by the diversity of issues within the livestock industry. Currently there are no standardised measures for the beef, pork and poultry industries which can strip out the variables and compare like against like. At the moment (other than dairy suppliers – see below), livestock farmers do not need to supply data for this metric.

Dairy

Currently, we simply need you to provide information on your average milk yield per cow per year, corrected for energy content (ECM), as well as an equivalent average figure for farms in your region (suppliers, not farmers need to supply this data).
The following paragraph explains how to do the correction for energy content (Energy Corrected Milk):

ECM (kg/cow/year) = yield (kg/cow/year) x [(383 x % fat) + (242 x % protein) +783.2)/3140]
As an example, working on the basis of 7000 kg milk produced per cow per year, and a fat content of 3.5% and a protein content of 3.2%

ECM = 7000 x [(383 x 3.5) + (242 x 3.2) + 783.2]/3140
= 7000 x [(1340.5) + (774.4) + 783.2]/3140
= 7000 x 0.923
= 6460.7 kg/cow/year

PARTNERING AND SHARING INFORMATION (SECTION 10.3.3.2)

Since commodity prices can fluctuate widely, suppliers should help farmers with contingency planning (e.g. forward buying feed to help reduce financial losses if prices fluctuate) and cash-flow projection, especially making farmers aware of the importance and value of this and general business planning, and with considering contracts that allow a longer term planning approach.

AVOIDING WASTE IN THE VALUE CHAIN (REQUIREMENTS 10.3.3.5 - 10.3.3.12)

Some of the requirements in this section are not relevant to livestock production.

By limiting stock losses (e.g. lowing mortality rates) via proper health planning and management (see Section 9, page 19-23 for cattle, page 24-26 for pigs and page 27-31 for poultry), more animals can be reared from the same number of breeding animals. Animals (produced for meat) should be marketed at the correct weight and conformation to ensure they meet market requirements and consumer demands. Animals which are over-fat will produce carcasses which may need to have the excess fat trimmed off at the processor, leading to increased costs for the processor, and a reduced price paid for the carcass.

The requirements that are not applicable are 10.3.3.5, 10.3.3.7, 10.3.3.8, and 10.3.3.9. You should answer N/A to these questions.

VARIETY/BREED SELECTION (10.3.3.17)

As discussed in the section on genetic diversity, you should take advice on breed selection from local breeding programmes as well as personal knowledge and judgement on what traits may be desirable. Suppliers are not required to test new breeds, as this is largely done at the industry level.

HARVESTING MANAGEMENT (10.3.3.18)

Mechanical harvesting is not applicable for most livestock production. Where harvesting systems are mechanised, such as in the catching of poultry, product quality should be monitored and the health and welfare of the animal should not be compromised by the harvesting method.

HARVESTING SCHEDULING AND ROTATIONS (10.3.3.19 AND 10.3.3.20)

These requirements are not relevant for livestock farmers – answer N/A.

Links to other Sections
Section 8 - Social and Human Capital (work-life balance, employment in the local community)

Future requirement changes to the SAC

10.1.6 will read "Market information for raw materials produced."

10.3.2.4 will read "All crop and animal products...."
10.3.3.2 (c) will read "... bulk purchasing of seed, seedlings, fertiliser, feed..."
10.3.3.2 (d) will read "... dialogues with plant and animal breeders..."
10.3.3.3 title will read "Crop/animal product yield and genetic potential" and
text will read "Farmers... taking into account safety, quality, animal welfare, ... costs."
10.3.3.17 title will read "Variety/breed selection",
text will read "... if high quality varieties/breeds are used... specify or supply the variety or breed for farmers to use."
10.3.3.22 (a) will read "... time between farm and factory..."

SECTION 11
TRAINING

Please see the main SAC Implementation Guide for guidance on training and requirement 9.3.3.4, which makes it clear that "managers and stock-keepers must be thoroughly trained, skilled and competent in animal husbandry and welfare, and have a good working knowledge of their system and the animals under their care".

Future requirement changes

11.2.1 (a) will read "... growing healthy crops/pasture..."

All other requirements apply.

SECTION 12
SUSTAINABLE FEED COMMITMENT

Key Issues in livestock production
- Increasing demand for livestock products
- Sourcing soy from regions where deforestation is an issue
- Finding alternative protein sources to soy for animal feed

Although there are no requirements in the Unilever Sustainable Agricultural Code which relate to section 12, the sustainable feed commitment is a future direction which Unilever would like to suppliers to consider. This may require suppliers of Unilever to have (as a minimum) a written commitment in the future.

In 2011 the world population reached 7 billion and is projected to reach 10.1 billion in the next ninety years, reaching 9.3 billion by 2050 (FAO, 2011). Not only is the global population increasing, income levels are also rising allowing for a change in dietary preferences towards a diet containing higher levels of animal based protein.

To meet these demands, the livestock industry is increasing the intensification and scale of production. The pig and poultry sectors have rapidly expanded and shifted towards a grain based diet to improve productivity. The dairy and cattle industries, in some geographical locations, have moved from grass-based to grain based diets also in an effort to increase production.

A high level of dietary protein is a crucial component to increasing livestock productivity and due to its superior protein content along with its price and availability soy is extensively used for this purpose.

The issue surrounding soy is that a proportion of its production is associated with de-forestation, for example, for the last 10 years South America has planted an additional 1.5 million hectares of soy, some of this on areas of tropical forests, and Cerrado. Global forest areas have been decreasing by an average of 0.2% per year (data from 1990-2005) (WRI).

Other adverse effects of soy production are a consequence of monoculture, which can negatively impact local biodiversity, and natural resources such as water and soil. Soy production is also implicated in displacement of local people and hunger problems due to fewer edible crops being grown.

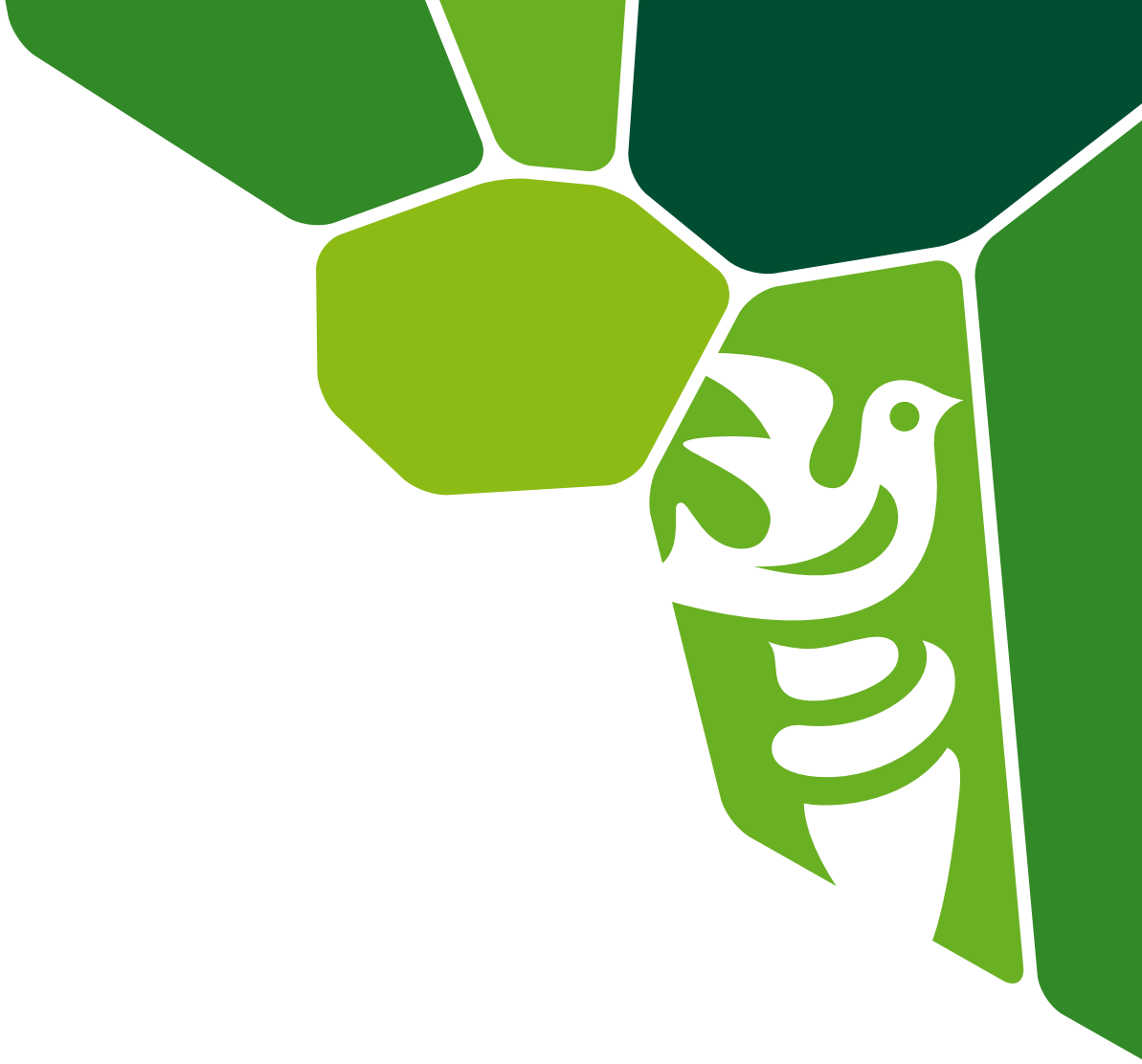
The negative effects of soy farming on people and the environment can be reduced by making the soy chain more sustainable. Unilever recognise the importance of soy as a significant source of protein in animal feeds, and therefore concludes that if it is included in the diet of livestock it should ideally be sourced sustainably.

Unilever supports The Round Table on Sustainable Soy (RTRS) and would encourage their suppliers to do the same whenever possible. In the United States Unilever is actively working with the United Soybean Board to ensure that there US Soy is in compliance with our requirements.

Unilever appreciates that by reducing the livestock industries reliance on imported soy and increasing the proportion of home-grown protein crops for use in animal feed is one possible option to reduce the environmental impact of soy grown on land which has recently been converted from natural habitat. Therefore, where possible, animal feed protein should be home grown or locally sourced (some alternative protein crops include peas, beans, lupins or alfalfa).

However, it should be noted that further research is required on the following:
- That growing alternative protein crops does not just displace the current environmental issues associated to soy to other regions of the globe or cause new challenges
- Research and development into alternative crops or raw materials to replace soy

Roundtable on Responsible Soy (RTRS)
The RTRS is an international multi-stakeholder initiative founded in 2006 that promotes the use and growth of responsible production of soy. Membership includes Producers, Industry, Trade & Finance and Civil Society Organizations. The mission of the RTRS is to ensure that "current and future soybean is produced in a responsible manner to reduce social and environmental impacts while maintaining or improving the economic status for the producer".



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