Unilever Sustainable Agriculture Code

Contents

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Disclaimer: This document has been discussed with the members of the Unilever Sustainable Agriculture Advisory Board (SAAB). The SAAB is a group of individuals, specialists in agricultural practices or representatives of non-governmental organisations (NGOs), who have expertise in different aspects of sustainability. They have agreed to critically assist Unilever in the evolution of Sustainable Agriculture Indicators and good practices for a range of raw material crops. The contents of this document and the choices made therein are, however, the responsibility of Unilever only.

Version 1

For further information/contact
Sustainable Agriculture Portal: i.unilever.com/sustainableagriculture
For Suppliers: www.GrowingfortheFuture.com
Publications: www.unilever.com/ourvalues/environment-society/publications

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0. General Introduction

0.1 Background to the Code

Unilever has always maintained a strong commitment to sustainability. It forms a core part of our company vision to double the size of our business while reducing our overall impact on the environment. At the same time we continue to serve billions of consumers across the world with products and innovations that help them feel good, look good and get more out of life. We expect our suppliers to work alongside us to achieve our ambitious consumer and sustainability targets.

We believe in sustainable development. The Unilever Sustainable Agriculture Code is our definition of Sustainable Agriculture. With this code, we ask our suppliers, and the farmers who supply them, to adopt sustainable practices on their farms. We expect all our suppliers of agricultural raw materials to commit to joining the sustainability journey and to demonstrate that they agree to minimum standards of performance and to continuously improve performance over time.

The Unilever Sustainable Agriculture Code covers practices that all our suppliers should strive to achieve. Where farmers are working with other assurance schemes, our aim is not to duplicate work for farmers. Our code will act as a benchmark and we will only ask for changes in areas where the standard in place and our code are significantly different.

For example, we are committed to sourcing our Lipton tea bag tea from Rainforest Alliance certified growers, our palm oil from RSPO certified sources and Ben and Jerry's ingredients from FairTrade sources. However if for example farmers have found a better solution to increase yield and quality, or reduce pollution, than that listed in our code, we are happy to accept alternative approaches.

How was this Code derived?

Between 1999 and 2003 Unilever published Good Agricultural Practice documents for our key crops. Over the years, we realised that while there are clear differences between the management of annual and perennial crops, temperate and tropical farming systems and different soils, landscapes and social settings, good farming everywhere has much in common. This collection of sustainable practices has been created and tested by our network of practical agronomists and farmers, consultants and sustainability advisers over the last six years and is, we believe, applicable to all our agricultural raw materials.

Supporting documentation

Information on how Unilever will implement this code with suppliers is available in our "Unilever Sustainable Agriculture Code Scheme rules". This document along with Implementation Guides and references is available on: http://www.growingforthefuture.com.

0.2 Structure of this document

These Good Practice Documents have been written to establish and maintain a Code for all Unilever suppliers of agricultural raw materials. The Code is divided into sections

- Introduction
- Mandatory requirements. Non-compliance with these requirements is unacceptable to Unilever.
- Good practices. This section addresses suppliers and farmers (see below). Within this section, the words "must" and "should" have been used. They are defined as:
  Must – A practice that is obligatory, unless there are exceptional circumstances. Any non-compliances must be temporary and addressed in a development plan or agreed as an exception by Unilever.
  Should - Strongly advised. These actions have the potential to become obligatory requirements ("Must") in the next review of this document.

Terms defined in the Glossary of Terms (Appendix 3) are in blue.

0.3 Scope

Unless otherwise stated in the text, the scope of this document is as below:

Practices referring to	Scope
Soils, soil management	Field on which Unilever crops are grown, including fields in rotation with other crops.
Crop husbandry	Unilever crops
Animal husbandry	Unilever animals. Animal slaughter and transport of animals off-farm is currently out of scope.
People, working conditions, health & safety, training	Whole farm
Activities stretching beyond the farm, such as some aspects of Biodiversity, Water or Value chain	Whole farm

0.4 Responsibilities

This Code is applicable to all Unilever suppliers of agricultural goods, the farmers producing them and contractors working on farm. We hold our suppliers responsible for implementing this Code. However, many good practices must be applied by farmers, not suppliers.

Sustainable Agriculture Code

1. Overall continuous improvement

		For all sections continuous improvement includes:	
1.1		Continuous improvement must be made by monitoring compliance with this Code and taking action where deviations demand so.	Mandatory requirement
1.2		Where a large number of farmers have difficulties complying with parts of this Code, or where implementation leads to supply issues, this must be brought to our attention, to ensure we can put into place joint solutions.	Mandatory requirement

2. Agrochemicals and fuels

Agrochemicals includes both Crop Protection Products (CPPs) and Synthetic Fertilisers

2.1	**Records**	***Unless specified elsewhere in the text, all records must be accessible and kept for at least 2 years. Records to be kept in this section include:***	
2.1.1	(checklist of records related to this section)	1. IPM strategic commitment	Must
2.1.2		2. Records to justify agrochemical application: - pest monitoring records for CPPs - nutrient balance calculation for fertilisers	Must
2.1.3		3. Agrochemical application record a) Product name b) Active ingredient/fertiliser type c) Crop area applied to (including location identifier) d) Rate e) Application date f) Operator name g) Re-entry period (CPPs only) h) Pre-harvest interval (CPPs only)	Must
2.1.4		4. Accident/spillage records and action taken in the event of an accident	Must
2.1.5		5. Spray equipment maintenance and calibration records	Must
2.1.6		6. Record of agrochemical store contents	Must
2.1.7		7. Risk assessment record covering all phases of agrochemical use	Must
2.1.8		8. Water quality monitoring records	Should

2.1.9		9. Training records of applicators and anyone who handles/ manages agrochemical products	Must
2.1.10		10. Details of agrochemical vendors used by the farmer	Must

2.2	Continuous Improvement	*Continuous improvement in this section includes:*	
2.2.1		We will actively phase out the use of the most toxic CPPs starting with WHO Ia and Ib compounds. Unilever suppliers must develop a phase-out plan for these compounds.	Must
2.2.2		Suppliers should raise awareness of and share knowledge/ opportunities for sustainable methods of pest and nutrient management, to ensure we capture best available techniques.	Should

2.3	Nutrient Management		
2.3.1	Introduction		
	Why this is important	Fertilisers and/or composts are important inputs to most farming systems, but it is important for both economic and environmental sustainability that nutrients are used efficiently and not wasted. N, P, K and S inputs need to be provided in balance and in association with appropriate micronutrients for maximum use-efficiency. To do this well, regular soil or tissue analyses will normally need to be undertaken, and the nutrient content of synthetic fertilisers, manures, composts and crop residues understood. If practical, nitrogen should be supplied locally by legumes grown as part of the crop rotation or between perennial tree crops and/or by recycling organic wastes (compost, manure etc.) produced on the farm. Nutrients wasted, and lost to air or water in the environment, result in lower profits, acid rain, eutrophication of water bodies, and global warming (greenhouse gas production)	
2.3.2	Mandatory requirements		
2.3.2.1	Measuring progress	We (Unilever) want to decrease the amount of nitrogen released into the environment. Our Sustainable Agriculture Metric "Nitrogen balance" provides a measure of that. Our suppliers must provide the necessary data for calculating this metric. Data requirements for the metrics are outlined in Appendix 1.	Mandatory requirement
2.3.2.2	Legal compliance	Unilever suppliers must be aware of and demonstrate compliance with national legal obligations with respect to the use of crop nutrients. Regulations typically apply to fertiliser purchase, handling and storage (both synthetic fertilisers and organic manures/ composts); amount and timing of application, application mode and technology; contamination of fertilisers (e.g. with heavy metals); monitoring heavy metal build up; and prevention of losses to the environment, secure storage to prevent explosives manufacture.	Mandatory requirement
2.3.2.3		Unilever suppliers must ensure that farmers are aware of all national legal obligations as above.	Mandatory requirement
2.3.2.4	Prohibitions	Disposing of fertilisers and/or containers in rivers, streams or other surface or ground waters is **prohibited**.	Mandatory requirement
2.3.2.5		Application of untreated human sewage and human sewage-contaminated water (water from sewers and water that may be contaminated with runoff from sewage treatment facilities directly to our crops is **prohibited**.	Mandatory requirement
2.3.3	Good practices		
2.3.3.1	Ensuring crops get the nutrients they need - the need for a nutrient management system	A crop nutrient management system must be in place, which aspires to optimise all crop nutrient supply, whilst balancing this with nutrient offtake when the crop is harvested. It is recommended that the Fertiliser Best Management Practices be developed on a crop and location specific basis.	Must
2.3.3.2	Required components of nutrient management system	As a minimum the rationale for making a nutrient application to a crop must include the following:	
		a) Responsibilities must be clearly assigned for planning and carrying out crop nutrition.	Must
		b) Knowledge of the soil's chemical, biological and physical composition must be a basic consideration for the availability and efficiency of nutrients available to crops. For example: the soil type and texture (proportion of sand, silt, clay), soil organic matter content, potential rooting depth (or compaction problems), soil stone content, soil parent material and soil pH.	Must
		c) The nutritional requirements of the crop to reach the desired yield and quality must be known and translated into locally specific operational targets for crop nutrition.	Must
		d) The amount of Nitrogen (N) - and Phosphorus (P) - containing nutrients applied through fertilisers within a season must be justified by a gap between actual and target nutrient supply, taking into account all sources of nutrients already available to the crop, including soil, previous fertiliser applications, harvest residues, legumes, green manures and cover crops.	Must
		e) A calculation must be made of a simple (input/output) nutrient balance of the crop, using best available information, considering nutrient inputs and nutrient off-take with the harvested part of the crop.	Must
		f) Records of the justification (as above) for applying fertilisers must be made, be accessible, and kept for at least 2 years.	Must

2.3.3.3	Recommended components of nutrient management system	In addition a crop nutrient management system should consider the following:	
		a) The nutritional status of the crop should be checked and compared against the nutritional targets. Systems to detect and diagnose nutrient deficiency or nutrient excess should be in place, e.g. tissue analysis and/or visual assessment.	Should
		b) There should be a plan for monitoring concentrations of available soil nutrients (specifically any nutrient where there is the risk of deficiency or excess supply – see Soils section).	Should
		c) Where nutrient inputs (including those from soil mineralisation, organic nutrient sources) are not equal to nutrients exported in the harvested product, this should be explained. Both nutrient mining and excess supply of nutrients have implications for sustainable crop production.	Should
2.3.3.4	Fertiliser application	a) Fertilisers must only be applied to the intended crop area, specifically avoiding water bodies, wildlife habitats and places of work or residential areas. This can be ensured by (1) the use of buffer zones; (2) the use of suitable application technology (e.g. the use of deflector plates or spot applications); (3) safe disposal of washings.	Must
2.3.3.5		Measures to avoid N and P being lost to the environment must be taken and provided as documented evidence. These include: 1) timing of application (e.g. avoid rainy periods, particularly on steep terrain); 2) choice of N-fertiliser type (e.g. nitrate-based are less prone to ammonia loss than urea) 3) soil conditions (e.g. ensure soil moisture allows good infiltration, avoid frozen, cracked, water-logged or compacted soils). It is particularly important to keep the N content of soils subject to freeze-thaw and anaerobic conditions in order to limit Greenhouse Gas (GHG) production; 4) application technique (e.g. split applications, incorporate or inject organic slurry and urea-based fertilisers).	Must
2.3.3.6	Protecting people and the environment – Risk assessment	Nutrient applications can pose hazards to people (e.g. pathogens) and the environment (e.g. eutrophication due to nitrate and phosphate losses). A risk assessment should be performed see Appendix 2 covering risks to operators, neighbours/bystanders, consumers, water, soil, air, biodiversity, and GHG emissions. **Please note: assessment of risks posed by synthetic fertilisers are covered in the section "Agrochemical Safety and Risk Assessment" – this section is included to ensure that manures, sludge and composts are also assessed.** The risk assessment should consider the following:	Should
		a) use	Should
		b) transport	Should
		c) storage	Should
		d) handling	Should
		e) contamination, e.g. with pathogens, heavy metals or organic toxins	Should
		f) choice of different nutrient sources	Should
		g) filling, cleaning and maintenance of equipment	Should
		h) handling and disposal of packaging	Should
2.3.3.7	Monitoring of water quality	Water bodies at risk of being affected by nutrient losses from the farm should be monitored for water quality, and symptoms of eutrophication investigated.	Should
2.4	**Pest Management**		
2.4.1	Introduction		
	Why this is important	Healthy crops are the basis of all agriculture. Ensuring that crops are healthy involves choosing the right crops and varieties for the location, creating ideal growing conditions and controlling pests (including insects, weeds and diseases), where they threaten to compromise yield or quality. Integrated Pest Management (IPM) is the key to sustainable pest control. The objective of IPM is to adopt cultural, biological, mechanical, physical and other strategies to discourage the development of pests in the crop, and by doing so to reduce the need for CPPs. Risks to human health and the environment are minimised by only using CPPs and other interventions when economically justified, by using less hazardous products where these are efficacious, and by adopting safe working practices. This means that all people who handle CPPs must be properly trained and have access to appropriate Personal Protective Equipment (PPE), and that all equipment and storage facilities are well-maintained and secure.	
2.4.2	Mandatory requirements		
2.4.2.1	Measuring progress	We want to reduce the use of hazardous CPPs (WHO classes Ia, Ib, II) linked to the production of our raw materials. We also want to reduce the impact of CPPs on aquatic ecosystems. Our Sustainable Agriculture Metrics "Chemical use" and "Water" provide measures of that. Unilever suppliers must provide the necessary data for calculating these metrics. Data requirements for the metrics are outlined in Appendix 1.	Mandatory requirement

9. Animal Welfare

9.1	Records	*Unless specified elsewhere in the text, all records must be accessible and kept for at least 2 years. Records to be kept in this section include:*	
9.1.1	(Checklist of records related to this section)	1. Application records for veterinary medicines/CPPs given to animals.	Must
9.1.2		2. Training records of animal stock persons.	Must
9.1.3		3. Records of withdrawal periods following the administering of medication/CPPs to animals.	Must
9.1.4		4. Animal health plan.	Must

9.2	Continuous Improvement	*Continuous improvement in this section includes:*	
9.2.1		Unilever suppliers should raise awareness and share knowledge/opportunities for monitoring improved animal welfare.	Should
9.2.2		Unilever suppliers should stimulate farmers to start monitoring, benchmarking and improving animal welfare.	Should
9.2.3		Unilever suppliers should support the farmers in finding the right tools and information to improve animal welfare.	Should

9.3	Animal Welfare		
9.3.1	Introduction		
	Why this is important	Animal welfare is an often-used term, but also a much debated concept. During the last 25 years, scientists have engaged in defining animal welfare, but no consensus has been reached. While the complexities of defining animal welfare and the limitations of any definition are recognised, the 'five freedoms' are considered an adequate and appropriate working basis for monitoring and improving animal welfare[3]. The five 'freedoms' are: 1. Freedom from thirst, hunger and malnutrition 2. Freedom from discomfort 3. Freedom from pain, injury and disease 4. Freedom to express normal behaviour 5. Freedom from fear and distress. These 'five freedoms' form the basis for the Unilever Code.	
9.3.2	Mandatory requirements		
9.3.2.1	Measuring progress	Not defined. No requirement at the moment.	
9.3.2.2	Legal compliance	Unilever suppliers must be aware of and demonstrate compliance with national legal obligations with respect to animal welfare. Regulations typically relate to diet, availability of water, accommodation, prevention/diagnosis of disease, sufficient space for normal behaviour, facilities, companionship, conditions which prevent mental and physical suffering, and in the case of severe illness asking for adequate help (preferably from a veterinarian).	Mandatory requirement
9.3.2.3		Unilever suppliers must ensure that farmers are aware of all national legal requirements as above.	Mandatory requirement
9.3.2.4	Prohibitions	Direct physical abuse and mental suffering of animals is prohibited.	Mandatory requirement
9.3.2.5		Supplying animal products (e.g. meat, milk, and eggs) without taking into account the legal waiting times for supplying medicines (like antibiotics) is prohibited.	Mandatory requirement
9.3.2.6		Feeding animals with ingredients that have been treated with CPPs without taking into account the legal waiting times is prohibited.	Mandatory requirement
9.3.3	Good practices		
9.3.3.1	Food and water provision	Animals must have freedom from hunger, thirst and malnutrition by ready access to fresh water and a diet to maintain full health and promote a positive state of well-being.	Must
9.3.3.2		Feed and water must be distributed in such a way that animals can eat and drink without undue competition.	Must
9.3.3.3	Environment	The environment in which animals are kept must take into account their welfare needs and be designed to protect them from physical and thermal discomfort, fear and distress, and allow them to perform their natural behaviour.	Must
9.3.3.4	Management	A high degree of caring and responsible management and stockmanship is vital to ensure good animal welfare. 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.	Must
9.3.3.5	Animal health	Animals must be protected from pain, injury and disease.	Must
9.3.3.6		The environment in which animals are kept must be conducive to good health.	Must
9.3.3.7		All producers must develop a documented health plan in consultation with their veterinary surgeon.	Must
9.3.3.8		Antibiotics and hormones should only be used prudently with the aim of optimising therapeutic efficacy and minimising the development of antibiotic resistance.	Should
9.3.3.9		The health plan records must be accessible and kept for two years after disposal of the animal.	Must
9.3.3.10		The health plan records must be traceable back to the animal and contain: the reason for applying the treatment; time of application; product or active ingredient name (where relevant); and amount applied (where relevant).	Must

3 The 'five freedoms' were developed by the Farm Animal Welfare Council (FAWC), which was established by the British Government in 1979, http://www.fawc.org.uk/freedoms.htm.

10. Value chain & local economy

10.1	Records	*Unless specified elsewhere in the text, all records must be accessible and kept for at least 2 years. Records to be kept in this section include:*	
10.1.1	(Checklist of records related to this section)	1. HACCP-based risk assessment for raw materials entering Unilever or suppliers' factories. Including how this links into a traceability system.	Should
10.1.2		2. Quality specifications for farmers to achieve.	Should
10.1.3		3. Yield per unit area.	Should
10.1.4		4. Simple book-keeping, basic gross margin per crop.	Should
10.1.5		5. Training records for QA and HACCP procedures.	Must
10.1.6		6. Market information for crops grown.	Should

10.2	Continuous Improvement	*Continuous improvement in this section includes:*	
10.2.1		Unilever suppliers should raise awareness and share knowledge/opportunities for improvement along the value chain.	Should

10.3	Value Chain & Local Economy		
10.3.1	Introduction		
	Why this is important	The fortunes of farmers, processors and ultimately Unilever are all linked in the value chain. Many "Good Practices" in this indicator require liaison, co-ordination and flow of information (and, of course, money) among participants in the value chain.The value flow along the chain should be managed so as to ensure all players, including farmers, are able to capture a reasonable share of the added value generated as a result of more sustainable agricultural practices. The information flow along the chain should also be managed in both directions. • Farmers, our suppliers and Unilever as links in the chain should address complaints and strive for continuous improvement. • Unilever should transmit its customers' needs and inform and educate suppliers and farmers on requirements of markets and consumers, urging them to produce higher volumes of better quality product for which they receive a fair price. Farmers and Unilever suppliers often participate in several value chains as part of their strategy to manage risks and diversify sources of income, in the face of uncertainties linked to climate, price fluctuations, market size variation, pests and diseases.	
10.3.2	Mandatory requirements		
10.3.2.1	Measuring progress	We want to use scarce agricultural land resources in a productive way. Our Sustainable Agriculture Metric "Produce more with less" provides a measure of that. Unilever suppliers must provide the necessary data for calculating this metric. Data requirements for the metrics are outlined in Appendix 1.	Mandatory requirement
10.3.2.2	Legal compliance	Unilever suppliers must be aware of and demonstrate compliance with national legal obligations with respect to quality and economic/financial/business propriety.	Mandatory requirement
10.3.2.3		Unilever suppliers must ensure that farmers are aware of all national legal obligations as above.	Mandatory requirement
10.3.2.4		All crop products must be proven to be within legal or trade standard limits for CPP residues, microbial contamination, heavy metals and significant foreign bodies and any other substances potentially harmful to consumers.	Mandatory requirement
10.3.2.5	Prohibitions	Not complying with Unilever Food Safety and Quality requirements – internally for Unilever companies or externally for third-party contract manufacturers and suppliers or farmers is **prohibited** see Appendix 2 for information on Risk Assessment, HACCP, QA & TCO.	Mandatory requirement
10.3.3	Good practices		
10.3.3.1	Crop and farm profitability	Both the crop (or other farm product) itself and the farm as a whole should be in profit and have sufficient cash flow in order for the farmer to have the confidence to invest in improvements and to stay in business.	Should
10.3.3.2	Partnering and sharing information	Given the need for farm profitability, suppliers who buy directly from farmers (in ways that do not intrude unreasonably into the farmers' businesses) should therefore take steps to:	
		a) Help farmers monitor and evaluate local market information on crop profit margins in order to ensure that the crops grown are profitable.	Should
		b) Understand opportunities available to farmers to improve their profit margins, and share this information with farmers (i.e. understand the cost benefit effects of proposed sustainable practices).	Should
		c) Work with farmers and farmer groups to generate opportunities for money-saving, and yield or quality improvements. Examples of services more available to groups than individual farmers are: • Bulk purchasing of seed, seedlings, fertiliser, other inputs and advice. • Opportunities for processors to pass on insights into the value chain to their farmers, e.g. on aspects of quality management or business opportunities for new crops or products. • Opportunities for farmers to take advantage of processors' insights into the market to develop new products or higher-value products. • Opportunities for agronomic and farm management advice and training from outside the farmers processor link in the chain (health and safety, good farming practices, integrated pest and disease management, opportunities to benefit from government support schemes, business and accountancy skills etc).	Should

		d) Depending on the supply chain involved, customer agronomists or supply managers may be in a position to coordinate information from farmers and suppliers to create useful dialogues with plant breeders, research organisations, innovators and/or regulators or others who will affect the value chain in the future. Unilever suppliers should encourage and/or facilitate such information flow.	Should
10.3.3.3	Crop yield	Farmers should aim to optimise their profit margins at tolerable financial risk. This means that they should not always aim for the highest yield, but should optimise yields, taking into account safety, quality, sustainable use of inputs, good agricultural practices and costs.	Should
10.3.3.4		Unilever suppliers should select farmers for their ability or potential to produce good yields of high quality product.	Should
10.3.3.5	Avoiding waste in the value chain	Planting and intended yield should be planned and scheduled to match factory processing capacity: • In many cases, several varieties, provenances or clones of planting material need to be used to spread yield more evenly throughout the year. • For annual crops, processors often schedule sowing times to ensure a spread of harvesting dates.	Should
10.3.3.6		Unilever suppliers (processors) should inform farmers as soon as possible if their produce is not required by a processor, so they can make other arrangements for using the land, labour or product if at all possible.	Should
10.3.3.7		Harvesting efficiency should be optimised: This means the harvest is triggered when the maximum yield at the desired quality has been achieved, correct harvesting standards/ techniques are used, and the harvest is carried out at the right time.	Should
10.3.3.8		The economic implications of sub-optimal harvesting should be understood so that rational decisions can be made about practices such as: • how important it is to undertake a second operation on the field to gather material not harvested the first time (for example, collecting loose fruit, a second cut of spinach, a second round of fruit collection or increasing the frequency of harvesting tea). • the implications of early-harvesting (e.g. to avoid bad weather or to improve factory utilisation and avoid factory over-capacity).	Should
10.3.3.9		Field-edge storage, transportation times and container filling should be optimised to prevent losses in raw material quality for processing.	Should
10.3.3.10		Factories should maintain high factory extraction/ conversion efficiency and minimise waste. If harvesting, transportation, sorting or processing of the raw material inevitably produces "second grade" products, attempts should be made to generate income-streams from these, e.g. by encouraging the development of complementary small-scale local businesses, to gain value from these rather than disposal through the waste stream.	Should
10.3.3.11		Good Manufacturing Practice (GMP) as defined by the Unilever category supply chains must be adopted in Unilever factories as prescribed in the Unilever Quality policy in order to maintain quality, profitability and the confidence of both suppliers and customers.	Must

10.3.3.12		Suppliers must also have in place their own GMP as outlined in the Unilever General Requirements for Third Parties, Contract Manufacturers & Suppliers, supplying to Unilever Foods.	Must
10.3.3.13	Maintaining and enhancing quality and food safety	Quality for agricultural raw materials starts in the field, not only in the factory, and quality can be lost anywhere along the value chain between field and factory. Failures in safety or product quality increase the Total Cost of Ownership (TCO) of our product.	
10.3.3.14		Unilever suppliers must have a HACCP plan for agricultural raw materials (for Unilever's own factories the plan must comply with specific standards). Details are available in Appendix 2, Risk Assessment, HACCP, QA & TCO.	Must
10.3.3.15		The HACCP-based plan must extend to farms, following a field-to-fork principle.	Must
10.3.3.16		Unilever suppliers must ensure they have explained to their farmers their roles and responsibilities in order to comply. The key areas in Unilever's quality assurance policy, underpinned by HACCP, cover the following: 1. Consumer safety 2. Product quality.	Must
10.3.3.17	Variety selection	The highest quality product can only be produced if high quality varieties are used, which are constantly reviewed for performance. This means that we and our suppliers must regularly test or update awareness of varietal developments in specifications for quality, pest and disease resistance and yield improvements, and recommend, specify or supply the seed or seedlings for farmers to plant.	Must
10.3.3.18	Harvesting management	Mechanical harvesting should not reduce product quality. All semi-mechanical or mechanical harvesting systems should therefore be managed to achieve high product quality.	Should
10.3.3.19	Harvesting scheduling	Crops should be harvested at the correct stage of maturity. It is generally better to optimise the harvesting schedule rather than sort out under-ripe or over-ripe produce during or after harvest. For many annual crops, careful management of variety choice, sowing date and inputs (fertiliser, irrigation) by processors on behalf of all farmers can help farmers achieve optimal harvesting insofar as is practical. This process needs to be fair and transparent in order to retain farmer confidence.	Should
10.3.3.20	Rotations	Crop rotations which minimise risks of contamination (for example by weeds or pathogens) and disease should be adopted.	Should
10.3.3.21	Logistics	Quality losses can often occur between harvesting and factory receipt. This involves:	
		a) Logistics should be well organised so that the transport time between farmers' fields and factory receipt is minimised.	Should
		b) Farmers, and their produce, should not be made to wait for long periods before receipt by transporters or factory. This wastes farmers' time and often leads to deterioration in product quality.	Should
		c) Transport systems should be designed to minimise quality loss. This may mean insulation, cooling and reducing crushing in the load. Specialised trailers and/or trailer inserts may be required.	Should

10.3.3.22	Traceability	Traceability between the field and factory – and from there into the rest of the value chain – can be vitally important if quality problems are discovered in the product at any stage. This is because traceability enables problem batches to be isolated (and minimises the financial and/or reputational losses incurred) and the problem traced to its origin. Where traceability is in place, there are also opportunities for developing different product streams for different qualities of product or markets. We recognise that full traceability can be impractical for some agricultural products (e.g. vegetable oils that have been through crushers and refineries), but even in these circumstances partial traceability is useful.	
10.3.3.23		Systems that enable traceability back to the product's field of origin should be put in place.	Should
10.3.3.24	Local sourcing	Raw materials and employment should be sourced close to the factory and farm wherever practical.	Should

11. Training

11.1	Records		
	(Checklist of records related to this section)	Records of the course contents and attendance must be kept for the duration of the employment (to show that employees are trained) or two years (to show that training is provided), whichever is longer.	Must

11.2	Training Requirements		
	Introduction		
	Why this is important	Training provision is a key element for the implementation of sustainable agriculture practices, and for the development of social and human capital	
11.2.1	Soil	Training and extension programmes should be in place to empower farmers to achieve sustainable soil management, specifically to:	
		a) raise awareness of the importance of soil management and conservation for growing healthy crops of high yield and quality;	Should
		b) train farmers and field staff to recognise symptoms of soil degradation from erosion, loss of soil structure, compaction, chemical deterioration, contamination or low organic matter concentrations; this can include simple tests and assays;	Should
		c) empower them to take appropriate preventative or corrective action	Should
		d) improve understanding of the role of soils in sequestering and emitting greenhouse gases (CO_2, N_2O, CH_4). (See Implementation Guide and Greenhouse Gas Calculator[4])	Should
11.2.2	Agrochemicals generally	Operators working with agrochemicals must be trained in their use and be in good health. After training, they must be competent to work safely with agrochemical products.	Must
11.2.3		Operators must be able to apply agrochemicals at the correct application rate and be trained in the use of application equipment.	Must
11.2.4		Training must include safety (e.g. exposure reduction measures, hygiene, personal protective equipment) storage and environmental impacts of using agrochemicals.	Must
11.2.5		Training must ensure that operators are able to understand (in a relevant language) and carry out the agrochemical label instructions, including the meaning of symbols often found on packaging and container labels (typically hazard warnings).	Must
11.2.6	CPPs specifically	Training must emphasise that persons under the age of 18 and pregnant and nursing women must not handle or apply CPPs of any type.	Must

4 GHG Calculator can be found on www.growingforthefuture.com.

11.2.7	Nutrients specifically	Training should ensure users of nutrients are aware of the risk of N and P losses due to volatilisation, leaching, run-off and erosion and of how to reduce such losses. Users should be aware of the role of N_2O (nitrous oxide) as a greenhouse gas (GHG).	Should
11.2.8	Biodiversity	A training/awareness raising programme should be developed.	Should
		The programme should be based on local issues that are relevant to farmers and farm workers. Local NGOs and universities are usually a good source of expertise and information. The following elements should be included:	Should
		a) Awareness of the value of crop genetic diversity as a key feature of preventing disease and pest build up.	Should
		b) Awareness of the value of biodiversity for its ecosystem services – such as water catchment stability, beneficial insect reservoirs and soil stability – and the links between farm activities and the enhancement of such services on farmland.	Should
		c) Awareness of the value of landscape mosaics and habitat diversity and the inter-connectedness of habitats and wildlife corridors within the landscape for biodiversity.	Should
11.2.9	Energy	Operators of power tools, machines and electrical installations must be trained. After training, they must be competent to handle machinery safely	Must
11.2.10		Operators must be trained in the use of protective equipment and safety procedures.	Must
11.2.11	Waste	All farm management and staff must be made aware of the need for waste segregation and proper storage and disposal, and waste management practices on the farm.	Must
11.2.12	Water	Irrigation managers, supervisors, operators should be trained in sustainable water use and in irrigation scheduling and management.	Should
11.2.13	Social & Human capital	Beyond the specific training requirements described in the other chapters of this Code, Unilever suppliers and farmers must provide employees with general training in Health & Safety in the workplace.	Must
11.2.14	Animal welfare	People working with animals must be trained to do so and have sufficient skills to take care that the five freedoms of animal welfare are complied with.	Must
11.2.15	Value chain	Unilever suppliers must ensure that factory staff are trained in the relevant QA and HACCP procedures.	Must

Sustainable Agriculture Code - Appendix 1

Metrics

February 2010

Changes in farming practice through the Unilever Sustainable Agriculture Programme

Goal Statement

Expression of intent for the Unilever sustainable agriculture programme
Unilever will buy all its agricultural raw materials from sources applying sustainable agricultural practices, so that

- Nature and biodiversity are protected and enhanced
- Soil fertility of agricultural land is maintained and improved
- Farmers and farm workers can obtain a liveable income and improve living conditions
- Nitrogen fertilisers are used efficiently and don't harm the environment
- Water availability and quality are protected and enhanced
- Greenhouse gas emissions are reduced

Consumer proposition

Statement of relevance for responsible consumers, **expressed for Unilever as a whole**
By buying Unilever products, you help to

- reduce the land used by Unilever for cultivation by x hectares
- Protect and improve x ha of habitat for biodiversity
- Improve soil health on x ha of land
- Improve the livelihoods of x farmers and farm workers
- Reduce N-fertiliser potentially lost to the environment by x kg
- Improve quality of x kt of water
- Reduce toxic chemical use by x kg
- Save x tonnes of greenhouse gases (CO_2 equivalent) from entering the atmosphere

Unilever has shaped the sustainability work in agriculture around 11 indicators.
(See www.growingforthefuture.com\brochures)

Agriculture is a complex production system, which needs to deal with natural variability in plant varieties, rainfall patterns, temperatures, etc. The 11 indicator framework is already a simplification, even too much of a simplification according to some. Yet we have worked with it to satisfaction for a number of years.

At the start of the Unilever programme we tried to organise monitoring of parameters (there are a number of parameters per indicator) within the indicator framework. But the differences between localities of farmer programmes, between crops, between farming systems and so on, led to a plethora of parameters that made it impossible to develop coherent communication about progress in the programme as a whole.

So we have tried to devise a consumer proposition. What would consumers value in terms of non-tangible attributes in the products they buy? The consumer proposition shown on the previous page was developed following recent, relevant trends in media and NGO communications.

The consumer proposition also points directly to metrics to express and measure progress.

Produce more with less

Over the last 50 years, food availability per capita has increased. This despite the fact that the world population has grown from 2 billion to 6 billion people. Breeding plant varieties that responded favourably to synthetic (nitrogen) fertiliser and the development of pesticides to protect crops from pests and diseases were the major breakthroughs that allowed this increase. However, the area of land under cultivation has also grown.

The future challenge for agriculture is perhaps even bigger: to meet the growing demand for food from a population that is predicted to grow to almost 10 billion by the year 2150 and at the same time demand more animal protein in the diet as a result of higher disposable incomes. This will put huge pressure on the remaining natural habitat to be converted into cultivated land. Add to that the recent growth in crops grown for biofuels, which will compete for land with traditional crops (for food, feed and fibre), and the conclusion is clear.

We need to produce more with less. More food (and feed, fibre and fuel), with less natural resource, especially land. This requires another revolution in agriculture, to further increase yields per hectare.

The potential for this is substantial. Agronomists know about the yield gap between experimental plots (carefully controlled field trials, with the best available varieties of plants, best nutrient management, best pest and disease management) and the yields good farmers get in reality. Farmers know about the yield gap between good farmers and not so good farmers. Targeted breeding programmes will go some way to address this, but increased knowledge and optimised inputs will also help.

We believe it is essential that farmers have access to the best varieties, best fertilisers and best knowledge required to optimise their yields, within ecological boundaries. We believe our sustainable agriculture programme will help them do that.

We therefore intend to start comparing the total number of hectares required to grow our raw materials, applying best practices, with the number of hectares required using less optimal practices. The difference between the two is the number of hectares we have "saved".

We realise that this approach ignores a number of issues which also affect yield:

- Higher yield might require more inputs (but inputs should not exceed ecological limits)
- Water might prove to be a constraint, so specific attention will have to be given to water efficiency
- It might not always be possible to grow crops on soils most suited for these crops. We will therefore always use local or national yield data as benchmarks.

Metric

Reduction in the hectares of land used by Unilever for cultivation	*Hectares required for Unilever volume of specified quality as per the average yield of our suppliers, compared to the hectares required for Unilever volume as per the average yield in the local country. The difference (if UL supplier yield is higher than the average) counts as an area saved.

* *The term yield here should be read as optimum yield at optimum quality as required by Unilever. Since the tea sector is in a situation of structural oversupply, tea will not be included in this metric.*

Formula:

(Unilever volume/avg local yield) – (Unilever volume/avg yield Unilever supplier) = ha saved

Protect and improve habitats for biodiversity

Land is finite. Agricultural and urban expansion is taking place into many of the world's rainforests, wetlands and other areas of high conservation value, leaving less wild land available for biodiversity conservation. Farmed landscapes are becoming more important for conservation.

Unilever is encouraging the farmers who grow our raw materials not only to conserve existing high biodiversity wildlife habitats on their own farms, but also to enhance the farmed landscape for biodiversity. This can be done, for example, by creating wildlife corridors, roosting sites, low-intensity grazed areas or by managing field margins or the crops themselves in such a way that they provide useful habitat. Enhancing the farmland biodiversity value is often possible without reducing the land value for farming. Some land managers and foods businesses (including Unilever) also support off-site conservation programmes, such as local nature reserves.

To create a simple metric, we will add together the land areas that we know are part of such schemes and relate this area to the total land area we estimate is used to grow Unilever crops worldwide.
We are well aware that this way of evaluating our contribution to biodiversity and conservation is an enormous oversimplification. It does not, for example, take account of:

- effort expended in reducing the loss of habitat by agricultural expansion into high conservation value areas,
- reducing pollution, which often improves habitat both inside and outside farmed areas,
- managing the spatial arrangement of habitats on-farm and within the farmed landscape to increase the value of the land for biodiversity and
- contributions to expensive conservation efforts that operate on only a small land area or off-shore.

Metric

Total area is the sum of the following:	Conservation programmes for natural habitats within farm or plantation boundaries, size in ha, proportional to cropped area for Unilever.
	Any off-site conservation programme, size of such programme in ha, proportional to Unilever support or control.
	Includes field margins, period of stubble after harvest**.

** *Any feature is weighted by the amount of time that it is present in one year; for example, 10ha of stubble present for three months count as 10x3/12 = 2.5ha; on the other hand, 1ha of permanent hedge counts as 1ha*

Formula:

(Conservation area within farm or plantation x proportion of crop bought by Unilever[1]) + (Conservation area off-site but managed/supported/sponsored by grower x proportion of crop bought by Unilever) = ha of natural habitat.

1 *For Unilever-owned operations, the proportion of the crop bought by Unilever is not factored into any of the metrics (i.e. sustainable practices are taken into account if they are carried out by Unilever companies, regardless of whether the raw material is actually used in Unilever products).*

Soil health

Soils are the single most important production factor for human nutrition and, globally, increasingly under threat of erosion and physical and chemical deterioration. Soils are highly complex ecosystems, accommodating millions of individual organisms per cubic metre including bacteria, fungi, insects and other arthropods, mammals and plant roots. Together with the mineral components of the soil, water and air, and dead organic material, they form a unique living unit with multiple functions for nature and mankind.

Managing soils to provide the best growing conditions for their crops is an art farmers have learnt over millennia. It tries to optimise (a) the soil structure, to ensure aeration and water movement; (b) the chemical conditions, such as pH, levels of available nutrients, organic matter and salinity; (c) the composition and functioning of the community of soil organisms. At the same time, sustainable soil management requires protecting soils from loss through water and wind erosion or dislodgement with the harvest products; as well as protecting it from pollutants, such as heavy metals, that may be in water, fertilisers or other agricultural inputs.

Unilever's Good Agricultural Practices, as encoded in our standards, provide guidance to managing and protecting soils sustainably. The total area of agricultural land managed in accordance with these standards is therefore a metric of the extent to which we achieve sustainable soil management.

Metric

Improve soil health on x ha of land:	Total land area used to grow Unilever raw materials under sustainability practices.
	Where applicable, indicators that need to show improvement and/or meet minimum standards are: • Soil organic matter (maintained or improved) • Nutrient balance (no nutrient mining, no over-supply) • Status of micro nutrients (monitored and managed) • Soil pH (monitored and managed) • Salinity, alkaline conditions (monitored and managed) • Soil conservation measures controlling erosion • Soil conservation measures controlling compaction

Formula:

Total area of land used to grow Unilever raw materials under verified sustainable practices x proportion of crop bought by Unilever[2]

2 As with previous metric, for Unilever-owned operations the proportion of the crop bought by Unilever is not considered relevant.

Livelihoods

In order for the food industry to be sustainable, farming has to be sustainable. In order for farming to be sustainable, farmers and farm workers have to be able to earn a living and live a decent and dignified life. We therefore intend to start counting the number of farmers and farm workers[3] who are benefiting from a decent income by virtue of being involved in the production of our agricultural raw materials. We also intend to start counting the number of farmers and farm workers in our supply chains who have access to a proper range of welfare facilities. These two components of our metric (income and welfare) cannot currently be ascribed to the same individuals, so we will report them separately[4]. Wherever possible we will use gender disaggregated data.

Income The vast majority of people who are involved in the production of our agricultural raw materials are not our own employees but are either employed by our suppliers or self-employed and under contract to us or our suppliers. To find out whether the wages and commodity prices that they are being paid are adequate in an absolute sense and in relation to local norms, we have referred to the work of major international development agencies and devised a formula based on their work. This formula takes three main factors into consideration: the statutory national or regional minimum wage; the average income (GDP/capita) for the agricultural workforce in the region; and the international poverty line (adjusted upward to $4/day, except for the lowest income countries in which case $2/day line is used). Henceforth, as long as the wages and payments of these workers are equal to or above the maximum of these three thresholds (unless no minimum wage is set, in which case we use the other two thresholds only), then we are satisfied that they are receiving a decent income[5].

Welfare In addition, by counting the number of farmers and farm workers who have access to decent welfare facilities (where the data is available and applicable) we are attempting to increase the scope of this metric beyond the purely economic. The metric will be monitored according to workers' access to a set of six different types of welfare facilities, namely housing, drinking water, sanitation, healthcare, education and advanced training. Since it will not often be possible to ascribe access to these different facilities to the same individuals, the absolute number of individuals who benefit from access to each different type of facility will be counted and reported separately. We will also collect and incorporate anecdotal evidence where appropriate.

Having made these commitments, we must also acknowledge that in some cases it will be very challenging to obtain the information we require. In the case of first-tier suppliers (where direct contact can be made with farmers and farm workers), we have the opportunity to collect and verify data pertaining to both income and welfare, but this data will not always exist. However, in the case of second- and third-tier suppliers we will (normally) only be able to obtain data relating to income. Therefore the metric may underestimate the true impact of our programme. Two other factors currently unaccounted for by the metric methodology include the impact on off-farm employment generation and the impact on the livelihoods of dependants.

Metric

Improve the livelihoods of x farmers and farm workers	Components of a decent livelihood: • Decent farmer and farm worker income • Access to welfare facilities (In addition, working conditions and human rights standards are enforced through Unilever's Business Partner Code)

3 This metric does not include workers involved in the processing of raw materials. In order to be consistent with the other metrics it takes the 'field gate' as its boundary for inclusion.

4 As well as checking income levels and welfare improvements, we are also committed to ensuring that workers enjoy decent working conditions and workers' rights. However, this work comes under another initiative. Unilever's **Code of Business Principles** *(for our own business) is enforced as a matter of company policy. Our* **Business Partner Code** *is currently being rolled out to all our suppliers and is monitored by an independent auditing NGO.*

5 The approach will normally be calculated at the national level but might have to be modified either up or down to reflect important sub-national fluctuations. This is probably best dealt with on a case-by-case basis and most applicable in countries with significant internal income and cost of living variations such as Brazil or China.

Formula:

Income

Number of people that benefit from a decent income = number of farmers and farm workers in our supply chain who earn at least the MAX out of (Minimum wage; Avg. GDP/capita for the agricultural workforce; International Poverty Line)

Welfare

The numbers of different people with access to welfare facilities are reported against each type of improvement separately, resulting in six different figures:

1. The number of workers with access to improved housing
2. The number of workers with access to improved drinking water
3. The number of workers with access to improved sanitation
4. The number of workers with access to advanced education or training above the requirements of the job
5. The number of workers whose children have access to formal primary education
6. The number of workers with access to healthcare for themselves and their families

Third party certification

Both components that make up our metric are covered by Rainforest Alliance and RSPO certification, including access to all six kinds of welfare facility. Henceforth, farmers and farm workers who work within certified operations can be reported against each part of the metric.

Nitrogen balance

Nitrogen (N) is vital for plant growth, high crop yields and quality. At the same time it can also harm the environment when lost from fields. The N-balance is a measure of how much of the N applied to a crop is actually used, and how much of it is potentially lost to the environment.

Nitrogen is one of the most important plant nutrients: N is a key element in all proteins and plays a vital role in photosynthesis. Plants take up N from the soil through their roots. In natural ecosystems, all N in the soil is either fixed from the air by specialised micro-organisms, which, when they die, release the N; or N is deposited with airborne particles, e.g. from volcanic eruptions. In managed ecosystems, such as agriculture, N applied through organic and inorganic fertilisers becomes the most important source of N to crops.

As N is a ‘precious’ mineral, natural ecosystems systems recycle it very efficiently from dead plant and animal bodies, faeces and litter. When crops are harvested, the N contained in them is removed, thereby breaking this cycle. Farmers replenish the N pool in the soil through fertilisation. As N is normally a limiting element, it also has a signalling function for plants: if there is little available in the soil, they will react with restricted growth while high amounts of available N in the soil encourage strong crop growth and high yields. N is also important for quality in crops that are high in protein, like cereals. This is why in many crops farmers apply more N than the crop will take up, in order to attain high yields and quality crops.

However, when N is applied over and above what crops take up it can also be lost to the environment and cause harm there: N becomes a pollutant when (a) surplus N leaches in the form of nitrate and pollutes ground water; (b) it ‘fertilises’ natural ecosystems that are adapted to low nutrient availability. High levels of available N favour the development of fast-growing species that can then out-compete the original species in the ecosystem; (c) high applications of N favour the formation of various gaseous N-compounds that can contribute to climate change, air pollution and acidification. Finally, synthetic fertilisers require high amounts of energy for production, thereby contributing to greenhouse gas emissions.

Loss of N from agricultural fields is one of the most important sources of environmental impact from farming. It represents the biggest source of embedded fossil fuel. It is the biggest contributor to fresh water contamination through run-off and leaching, leading to eutrophication. It is the biggest contributor to greenhouse gas emissions from farms, since N fertiliser (and N bound by legumes) partly decomposes to nitrous oxide N_2O, a greenhouse gas 296 times more potent than CO_2.

Unilever strives to apply as much N as needed to ensure high yielding high quality crops while losing as little of it as possible to the environment. A simple metric of how successfully we avoid losses to the environment is the N balance (N inputs minus N outputs), which is a measure of N efficiency. Detailed knowledge of N requirements during the crop growth cycle, ensuring good soil and growing conditions, choosing the right fertiliser for each purpose and using advanced application techniques are all factors by which farmers can improve the N efficiency and work towards balanced inputs and outputs.

Metric

Reduce the amount of nitrogen lost to the environment	The N balance can be expressed as the difference between N inputs from fertiliser and N outputs with the crop

Formula:

N lost (kg/yr) = N input (kg/yr) – N output (kg/yr), where N input is the sum of all organic and inorganic fertilisers and N output the N taken off with the harvested proportion of the crop. The summation takes place over the reporting unit. No. of kilos lost fewer than previous year is reported.

Chemical use

In this context, chemical use means Crop Protection Products (CPPs). The majority of farmers who supply raw materials to Unilever apply CPPs to their crops.

We have been working with our suppliers and growers to minimise the use of CPPs whilst still maintaining the yield and quality of raw materials we need for our business. We have restricted the number of CPPs which can be applied in contract crops and are encouraging our suppliers and influencing at the sector level for pest control systems which maximise non-CPP methods of control.

The use of CPPs is an emotive issue in agriculture and can quickly become over-complex in communication terms. For ease of communication, we have created a simple metric which reports the reduction in the amount of CPPs used from one year to the next, including the toxicity. The toxicity rating uses the World Health Organization's hazard classification of CPPs. Through our work on good practices with our suppliers and growers linked to CPP usage, we believe this metric's trend will be a shift towards the use of less toxic CPPs as well as a reduction in the amount of CPPs applied.

We realise the metric is an oversimplification, which doesn't take into account:

- CPP usage which is influenced by a number of natural factors beyond our control, such as weather conditions, which can lead to increases in usage between seasons.
- The fact that the WHO hazard classification is not an environmental hazard classification.
- CPP residue levels in food products.

Metric

Reduce toxic chemical use	Report on Active Ingredient use in three classes: WHO (Class 1a + Class 1b), Class 2, Class 3, Class U, Class Not Listed.

Formula

Report WHO (Class 1a + class 1b), Class 2, Class 3, Class U, Class Not Listed: Number of kgs less than previous year.

Water

Water is a precious and, in many regions, an increasingly scarce resource. Agriculture uses water to irrigate crops, and fertilisers, CPPs and eroded soil can pollute water. Each of these factors can also affect the supply to users downstream. Unilever can improve the quality and availability of water in areas where our crops are grown in two ways: firstly by reducing the amount of CPPs or fertilisers used, i.e. improving water quality, and secondly by improving the efficiency of water use for irrigation.

Water Quality

Calculating the volume of water whose quality is improved by sustainable agriculture is complex and difficult to do when aggregating up a supply chain. We have chosen to link our metric to the idea that 'he solution to pollution is dilution', and calculate the theoretical volume of water required to dilute the negative effects of fertilisers and CPPs to an acceptable level. By reducing these inputs, Unilever reduces the volume of water potentially affected.
To calculate the amount of water 'saved' in this way, we:

- Calculate the amount of water needed to dilute to the acceptable level the effects of fertilisers and CPPs lost
- Compare this amount with the amount theoretically needed for dilution in previous years.

Improve the quality of run-off water from fields	Express fertiliser and CPP loss to water as a volume of water by diluting volume of CPPs used to NOEC (No Observed Effect Concentration); dilute to drinking water limits for N, ignore P. Compare to theoretical volume required in previous year. Volume of water "saved" each year is reported.

Water Use Efficiency

To calculate the total amount of water 'saved' by increased efficiency in irrigation systems, we:

- Calculate the total amount of water used by our growers to irrigate crops
- Compare with water use in previous year.

Reduce the volume of water used for irrigation	Compare volumes/ha water for irrigation with previous year. Volume of water "saved" each year is reported.

Formula:

1. Calculate volume affected by diluting chemicals to either drinking water concentrations (for nitrogen) or NOEC (for CPPs) (assume 1% CPP applied ends up in water[6]), and compare with previous year;
2. Calculate difference between previous year water use and current year water use;
3. Add the two volumes.

When the two 'saved' volumes are added together, this represents the total amount of water 'saved' by Unilever's sustainable agriculture programme. We are well aware that this metric does not account for all effects of agriculture on water resources addressed in the sustainable agriculture programme, e.g. the sustainability of access to water at catchment level. Neither does it address other water issues such as flooding or ground-water management. The simplified metric is for communication purposes.

6 *Morten Birkved, Michael Z. Hauschild (2006) PestLCI A model for estimating field emissions of pesticides in agricultural LCA, Ecological modelling 198 (2006) 433–451*

Crop greenhouse gas footprint

Global GHG emissions due to human activities have grown since pre-industrial times, with an increase of 70% between 1970 and 2004. According to the Fourth Assessment Report of the UN Intergovernmental Panel on Climate Change (IPCC)[7] the atmospheric concentrations of the three main greenhouse gasses (GHGs) – CO_2, CH_4 and N_2O – have increased markedly from their pre-industrial values as a result of human activities. The atmospheric concentrations of CO_2 and CH_4 today exceed by far the natural range over the last 650,000 years.

Global increases in CO_2 concentrations are due primarily to fossil fuel use, with land-use change providing another significant contribution. The observed increase in CH_4 concentration is predominantly due to agriculture and fossil fuel use. The increase in N_2O concentration is primarily due to agriculture.

Warming of the world's climate system due to these increased GHG concentrations is now unequivocal and evident from observations in real climate data. Changes are taking place faster and more strongly than projected in the past. Also, observational evidence shows that many natural systems are being affected by regional climate changes.

The agricultural sector contributes around 6 Gt CO_2-equivalents/yr or 13% of mankind's greenhouse gas (GHG) emissions – as much as transport. Farming emits:

- Nitrous oxide (N_2O), mainly through nitrogen fertiliser use, soil tillage, manure management and peat land cultivation and energy use for producing inputs and carrying out field operations. N_2O is around 300 times more potent as a GHG than CO_2
- Methane (CH_4), mainly from fermentation from the digestive system of livestock, paddy rice cultivation, manure management and energy use for producing inputs. CH_4 is over 20 times more potent as a GHG than CO_2
- Carbon dioxide (CO_2), mainly through conversion of land, such as forest and savannah to crop land or grassland to arable land; and energy use for producing inputs.

Farming has two means by which it can contribute to GHG mitigation:

1. Reducing emissions of N_2O, CH_4 and CO_2 – decreasing the flow of GHGs into the atmosphere
2. "Absorbing" CO_2 from the atmosphere by storing carbon (C) in soils and standing biomass, such as trees – increasing the flow of C into long-term stores (so-called carbon sequestration).

However, most of these flows (emissions and sequestration) take place in natural systems: the farmed environment. Other than in industrial processes, flow into and out of natural systems are very variable and difficult to measure. This makes them difficult to manage at the field and farm level, where farmers could actually influence them.

Unilever is working with its partners to enhance the understanding of agricultural GHG flows at field and farm level and to come up with practical guidance for GHG mitigation for farmers. While we acknowledge that, at this stage, we may not yet be able to always effectively manage them, we can try to quantify the emissions from our operations by using a common GHG emission estimation tool.

This metric therefore estimates the following GHG emissions from our cropping operations:

- N_2O from soils, fertiliser use and fossil fuels combustion
- CO_2 and CH_4 from fossil fuel combustions.

We are using our Greenhouse Gas Calculator, published on www.growingforthefuture.com, for the calculation of the GHG footprint of our crops (see website for more information). A future revision would include GHG emissions from livestock as well as possible carbon sequestration.

We will report both the absolute footprint (in CO_2-equivalents) and the change compared to the previous year.

7 IPCC 2007, Fourth Assessment Report (http://www.ipcc.ch/ipccreports/assessments-reports.htm).

Metric

Amount of GHG emitted from cropping	Sum of N_2O from soils, fertiliser use and fossil fuels combustion CO_2 and CH_4 from fossil fuel combustions, Weighted by their 100-year Global Warming Potentials.

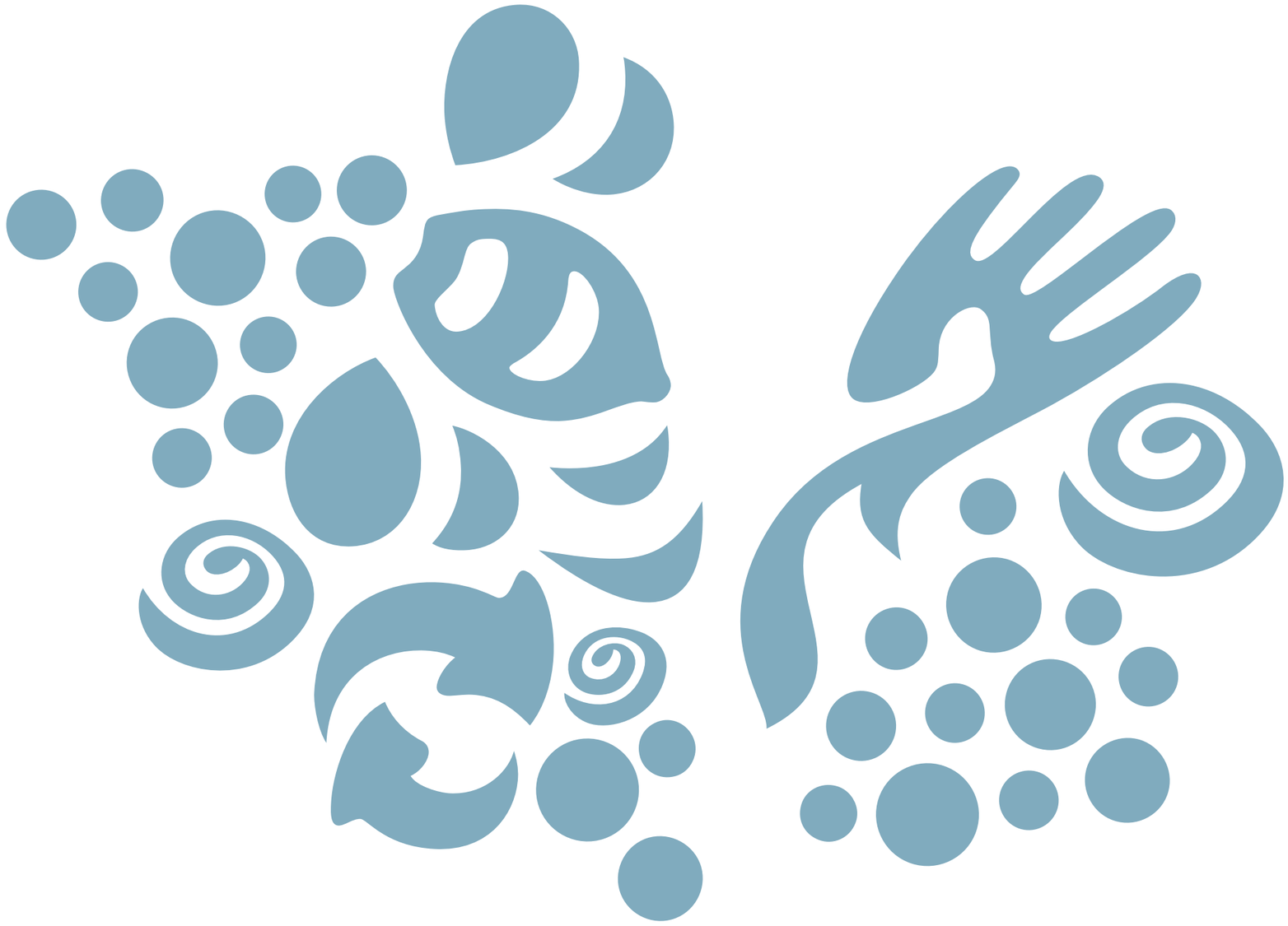
Formula:

GHG emitted from cropping = sum of CO_2 emitted x 1 + sum of N_2O emitted x 296 + sum of CH_4 emitted x 23[8]

8 The Global Warming Potentials of N_2O and CH_4 used here are from the IPCC's Third Assessment Report. Slightly higher GWPs have been published in the Fourth Assessment Report (2007): N_2O – 298; CH_4 – 25.

Sustainable Agriculture Code - Appendix 2

Risk Assessment, HACCP, QA, and TCO



2.1 Introduction

Many Good Practices require a Risk Assessment to be performed and risk-based management systems put in place. In the "Value Chain" section we ask that all risk assessments be brought together under the general HACCP approach to Quality Assurance (QA).

2.2 Risk Assessment - General Principles

Risk Assessment and Risk Management

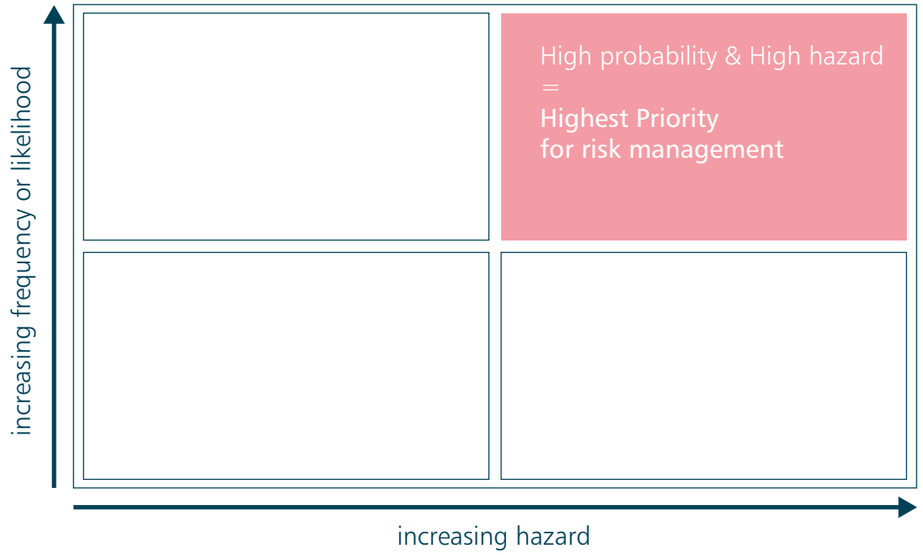
Human health and safety, environmental and other social risks must be assessed according to hazard and probability. The basic idea behind risk assessment is to combine assessments of hazards with assessments of **probability** that the event will occur. See Risk Matrix below.

- The hazard is any source of potential damage, harm or adverse effects. It is assessed in terms of how serious the consequences of any event or behaviour are.
- Probability refers to the likelihood of the event happening at all, or the frequency with which it occurs.

For all risks, the expected exposure routes must be taken into account.

Appropriate measures to mitigate risks are then put in place.

Risk Matrix



A serious hazard, combined with a high likelihood (= highest **risk**) should be assigned the highest priority for risk management.

Risks should be re-assessed once risk mitigation procedures are put in place, to address the residual risk.

This is a continual process.

For suppliers with little experience of risk assessment, we recommend an excellent general introduction and process guide to risk assessment (focused on Health and Safety) available from the source below:

'Five Steps to a Risk Assessment': http://www.hse.gov.uk/risk/fivesteps.htm

Once a risk assessment approach has been developed for health and safety, it is relatively easy to see how a similar approach to environmental, reputational, quality and other social risks can be developed.

Other documents which may help are available at: http://www.hse.gov.uk/risk/expert.htm

Risk assessments must be based on relevant and up-to-date expertise.

2.3 HACCP

The HACCP (Hazard Analysis Critical Control Point) approach to consumer safety and product quality is a mandatory form of risk assessment for Unilever third parties, Contract manufacturers and **direct** suppliers to Unilever foods businesses.

Suppliers should contact Unilever directly for "Unilever General Requirements, Third Parties, Contract Manufacturers & Suppliers supplying to Unilever Foods, July 2004. Guideline for the Implementation of HACCP in Unilever (internal to Unilever only)"

For more distant and secondary suppliers, for whom HACCP is advisable but not mandatory, excellent advice on implementing HACCP can be obtained from "Codex Basic Hygiene text + Codex HACCP":
www.codexalimentarius.net/download/standards/23/cxp_001e.pdf)

and the "FAO HACCP Training Handbook": http://www.fao.org/docrep/W8088E/W8088E00.htm).

The application of HACCP to agriculture is also described in
"HACCP in Agriculture & Horticulture Guideline No. 10" (2nd ed.) 2000 and supplement 4, 2003. Campden & Chorleywood Food Research Association.

Many contamination and quality issues and risks (e.g. CPP contamination, stones, insects, enteric bacteria) arise during agriculture. The HACCP approach should therefore not be confined to factory situations but should extend into the field and agricultural operations. Any HACCP study for food processing must cover inbound raw materials (and therefore agricultural production) to fully understand where Critical Control Points are. Farmers must understand their responsibility.

HACCP is linked to Quality Assurance (QA) and can be used to identify where cost optimisation opportunities may exist through working in partnership with suppliers using the Total Cost of Ownership (TCO) concept.
The TCO is an estimate of the life-cycle costs of owning a product or asset, and therefore includes the purchase price, any additional costs related to sub-optimal performance, and any additional training or maintenance requirements (for example, increased cost of handling out-of specification product; damage to reputation, re-packing or re-cleaning costs incurred by a product recall).

Consideration of TCO results in

- Avoidance of hidden costs
- clearer specifications, and
- by taking a holistic cost calculation along the value chain from raw material purchase to consumer purchase, it becomes easier to eliminate extra/hidden on-costs linked to reputation (product boycotts) or quality (consumer complaints)

HACCP, QA, TCO are not difficult, complicated or bureaucratic, unless an organisation makes them so. What is necessary is a thorough understanding of the value chain, through every step of agricultural production, including those factors that cause concern to customers (internal and external), consumers and key opinion formers.

2.4 HACCP and Agriculture

Stages in a HACCP study extending into agricultural production are:

Planning

1. Define the terms of reference
2. Select the HACCP team (a team might not be required for a small operation)
3. Describe the essential product characteristics
4. Construct a flow diagram of how the raw material is grown, including seed/transplant/clone production, through harvest to delivery to a Unilever factory.

Application

1. List all the hazards associated with each process step, conduct a hazard analysis and consider measures to control the identified hazard (HACCP Principle 1)
2. Determine Critical Control Points (HACCP Principle 2)
3. Establish critical limits for each CCP (HACCP Principle 3)
4. Establish a monitoring system for each CCP (HACCP Principle 4)
5. Establish a corrective action plan (HACCP Principle 5)
6. Establish verification principles (HACCP Principle 6)
7. Establish documentation and record keeping (HACCP Principle 7)
8. Review the HACCP Plan

Critical Control Points

A point beyond which no further hazard elimination, removal or reduction to a safe level can occur. This must not be confused with actions, which can reduce the level of hazards.

2.5 Safety and Quality hazards

Typical Crop Safety and Quality Hazards include:

Biological

- Variety
- Pathogenic bacteria, e.g. E.coli, Salmonella
- Fungal toxins
- Plant toxins, (e.g. glycoalkaloids from solanaceous weeds)
- Fungal bodies or plant berries (e.g. ergot, nightshade)
- Genetically modified materials (derived from GMOs)
- Fungal moulds and bacterial rots (spoilage)
- Plant diseases
- Insects
- Animal or human matter,– e.g. faeces

Chemical

- CPP residues, (e.g. exceeding MRLs (Maximum Residue Limits) or using CPPs not permitted in destination country).
- Nitrate levels – certain leafy crops such as spinach
- Heavy metal levels, (e.g. Lead (Pb), cadmium (Cd)
- Mineral oils – lubricants, hydraulic oil, diesel
- Composition, (e.g. protein, sugars, oil)
- Dry matter content

Physical

- Glass
- Metal
- Stones
- Wood
- Extraneous vegetable matter (EVM) – contamination with other plant parts
- Foreign EVM – contamination with plant parts not from the crop
- Physical damage and blemishes
- Size/shape
- Colour
- Soil contamination

2.6 Other risk assessments

Typical Scope of Risk Assessments

The general risk assessments (i.e. those not specifically linked to quality or contamination where HACCP is the required methodology) must cover **all areas of risk**:

- People (e.g. operators, neighbours and bystanders)
- Environment (e.g. soil, water, air and biodiversity)
- Economic (e.g. profitability)

and consider

- Normal (routine use and management),
- Non-routine or abnormal (e.g. when handling CPPs ‘abnormal’ means extraordinary but planned situations, such as refilling fuel tanks or change of oil filters) and
- Emergency (e.g. during fire or flooding) circumstances.

For example, properly constructing, bunding and using a tank of diesel will help manage risks during routine activities. Non-routine situations, like replacing a valve, and emergency circumstances, like a fire, may introduce additional risks (spillage, explosion), which are not effectively managed by the above measures.

Non-routine situations can be regularly arising (e.g. maintenance of equipment; staff exiting a building by a secondary exit instead of the normal exit); or they may never have happened to date, but are theoretically possible (e.g. power cut; livestock epidemic). Non-routine situations can increase the significance of a risk or introduce additional risks, compared to routine activities.

2.7 Risk management

Any identified control or mitigation measures must be hierarchical in approach
For risks associated with **Nutrients**, for example, we ask:

1. **Fertiliser choice** Can a formulation be used that reduces the identified risk (e.g. pellets rather than liquid fertilisers, organic fertilisers rather than synthetic inorganic ones, ammonium nitrate rather than urea)?
2. Can the identified risks for the selected fertilisers be controlled through **engineering approaches** to **prevent or reduce exposure** e.g. bunded storage systems, riparian strips, enclosed tractor cabs?
3. What are the best **handling procedures to reduce or minimise exposure**? e.g. ensuring competent/trained operators, proper calibration of equipment, mixing practices, hygiene practices etc.
4. Finally and only after all other approaches have been assessed, what Personal Protective Equipment (PPE) is necessary to control any residual risk?

For risks associated with **Pest Management**, for example, we ask:

1. **Substitution** – can another pest control method be used not involving the application of chemicals?
2. Can a **safer CPP or formulation be used**? The use of Manufacturers Safety Data Sheets or public domain risk assessment tools should be encouraged - for example Unilever's PRoMPT system.
3. Can the identified risks for the selected CPP be controlled through **engineering approaches to prevent or reduce exposure**? e.g. improved store security, closed transfer systems, enclosed tractor cabs, CPP formulations in water soluble bags
4. What are the best **handling procedures to reduce or minimise exposure**? e.g. ensuring competent/trained operators, appropriate nozzle height, mixing practices, hygiene practices etc.
5. Finally and only after all other approaches have been assessed, what **PPE** is necessary to control any residual risk?
6. The exposure risks for individuals who spray CPPs must be considered, particularly to determine whether health checks are necessary.

Guidelines (to help inform risk assessments related to the use of Crop Protection Products) on how to deal with CPP poisoning in an emergency can be found on the Crop Life site at: http://www.croplife.org/library/attachments/67b01792-9a04-46fe-ad06-2938f92fd6b2/6/Guidelines_for_Emergency_Measures_in_cases_of_Crop_Protection_Product_Poisoning.pdf

The management of **Health and Safety at Work** in agriculture must be based on a risk assessment approach, and be accompanied by

- Input from workers representatives & agreement on priority setting
- Provision of Health and safety awareness training
- Provision of first aid training and first aid kits in the workplace

There are risks to people, the environment, our products and our reputation arising FROM agricultural practices, and also risks arising from outside farms and the supply chains TO agricultural operations. This inevitably results in some risks appearing more than once in the Unilever Sustainable Agriculture Code.

Sustainable Agriculture Code - Appendix 3

Glossary of terms

Agrochemicals
The term agrochemicals in this document includes **Crop Protection Products (CPPs)** and **Synthetic Fertilisers**.

Biodiversity Action Plan (BAP)
An action plan for the protection and sustainable use of biodiversity. The concept of the BAP was originally defined by the Convention on Biological Diversity (CBD) to enable implementation of the convention at national and local levels. It is taken here to encompass any kind of conservation plan and biodiversity management system, so long as it fulfils the three key actions that are recommended by the Sustainable Agriculture Code implementation guide (a Unilever "pro-forma" for creating a BAP is available on www.growingforthefuture.com).

Buffer zone
A defined area either bordering a protected area or separating two areas managed for different objectives in order to prevent **agrochemicals**, run-off or dust from passing from one area to the other. Most commonly used to protect riparian zones, **water bodies**, wildlife habitats, workplaces, housing, livestock habitation, public areas and public access points from contamination.

Child
A person under 15 years of age. There are two exceptions to this definition (in accordance with the ILO Minimum Age Convention 138: 1973):

1. Where the local minimum age, under the law, for work or compulsory education is higher. In these cases the higher age would apply.
2. Where the local law sets minimum age of 14 in accordance with developing-country exceptions under ILO Convention 138. In this case the lower age will apply.

Crop Protection Products (CPPs)
Substances used to prevent, control or eliminate **pests** (insecticides, herbicides and fungicides), substances intended for use as plant growth regulators, defoliants, desiccants or agents for thinning fruit or preventing the premature fall of fruit, or substances applied to crops to protect them from deterioration during pre- or post-harvest storage and transport. We have used this term (rather than "pesticides") in this code because we want to make it clear that we wish to refer to a wider range of substances than those used to control **pests**.

Destroy (important habitat)
Cause significant damage to an ecosystem, whether by direct or indirect action. This can be as a result of tree-logging; extraction of non-timber products and wild-harvesting; burning; application of **agrochemicals**; partial or complete conversion to agricultural land, urban use, development or wasteland; introduction of invasive or exotic species; changes to the depth or direction of a watershed, draining of wetlands, etc.

Fertigation
The practice of distributing fertilisers to plants using irrigation water.

Fertilisers
Natural or man-made substances containing plant nutrients, including organic (manures, composts etc) and **synthetic** (inorganic/mineral) **fertilisers**.

Good Manufacturing Practice (GMP)
That part of quality assurance which ensures that products are consistently produced and controlled to the quality standards appropriate to their intended use and as required by the product specification. GMP is concerned with both production and quality control.

Greenhouse gases (GHG)
Atmospheric gases that absorb infrared radiation and so contribute to the "greenhouse effect", global warming and climate change. The main GHGs considered to be responsible for climate change and global warming are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Agriculture is a major emitter of both nitrous oxide (derived from **fertilisers**, and nitrogen-fixation by legumes) and methane, which are estimated to have the global warming potential of 298 and 25 times that of carbon dioxide respectively. Use of energy for vehicles and food processing also releases a great deal of carbon dioxide into the atmosphere.

HACCP (Hazard Analysis Critical Control Point)
Approach to consumer safety and product quality that is a mandatory form of risk assessment for Unilever third parties, contract manufacturers and direct suppliers to Unilever foods businesses. HACCP is also recommended for food processors who supply Unilever indirectly. Further information and references are available in the Risk Assessment section of **this code** (Appendix 2).

Important Habitat
A habitat is a place or type of site where an organism or population naturally occurs. An important habitat is a habitat listed and protected under national legislation or otherwise internationally recognised (e.g. Ramsar Sites, Important Bird Areas, areas of Primary or High Conservation Value Forest or other ecosystems of High Conservation Value, Nature Reserves or other critical sites for **rare** or **endangered** species).

Industrial-scale processing units
Large on-farm or off-farm drying, freezing, pasteurisation, extraction, storage and refining facilities or factories. Such units typically serve either one large farm/plantation or many smaller farms and may be run as part of the farm business or separately. They will usually employ managers, engineers and workers. Industrial-scale processing units are often managed by Unilever **suppliers**.

Integrated Pest Management (IPM)
Pest management which uses: techniques (e.g. cultural, genetic) to prevent or minimise **pest** occurrence; action thresholds and monitoring to ensure control methods are used only when necessary; a range of **pest** control methods (e.g. cultural, biological and chemical) which aims to minimise risk to people, property and the environment.

Many more definitions of IPM exist (see http://www.ipmnet.org/ipmdefinitions/defineIII.html#90's for examples). The above definition outlines the aspects that Unilever considers essential.

Irrigation
The application of water to land or crop canopies to assist in the growing of crops and pastures. The specific purpose can vary, but it is normally to bridge the gap between actual and potential evapotranspiration.

Nursing (women)
Women who are feeding an infant or young child with breast milk (also known as 'breastfeeding'). Nursing women are especially vulnerable to **CPP** exposure because of the physiological burden of supporting their developing children. Their infants, who absorb a larger intake of pesticide residues per body weight in their food than adults, are also vulnerable to exposure by intake of contaminated breast milk.

Pest
Any organism that damages crops, injures or irritates livestock, or reduces the fertility of land. Includes rodents, birds, insects, mites, bacterial, viral and fungal diseases and weeds.

Rare, threatened or endangered species
All species that are either:

(a) indicated as rare, threatened, vulnerable or endangered under national, state or provincial laws
(b) listed in the International Union for Conservation of Nature and Natural Resources' (IUCN) Red List of Threatened Species as vulnerable (VU), endangered (EN) or critically endangered (CR); see http://www.iucnredlist.org/
(c) listed in the three CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) Appendices; see http://www.cites.org/eng/app/appendices.shtml.

The Red List of Threatened Species is a list of threatened taxa, which classifies and provides taxonomic, conservation status and distribution information. The classifications used by the IUCN include: extinct, extinct in the wild, critically **endangered**, **endangered**, vulnerable, near-**threatened**, least concern, data-deficient and not evaluated. The Red List and any local Red Lists inform decisions on conservation priorities for any part of the world. When deciding conservation priorities for farmland, Red List information will usually be combined with information on habitats on and around the farmland (for example nature reserves, important bird areas and any wildlife corridors or migration routes) and an assessment of the cost, likely benefits, and likelihood of support by farmers, of proposed action.

Reuse

Use of an item more than once. This includes using it for the same purpose as its original use (e.g. using a plastic shopping bag more than once as a shopping bag), and using it for a new purpose (e.g. using a plastic shopping bag first as a shopping bag and then as a bin liner). Like recycling, reuse can also involve salvaging component materials from complex products, but it does not involve reprocessing.

Recycle

Reprocessing of used materials and **waste** into new products. Recycling can either produce a fresh supply of the same material (e.g. paper to paper) or of different materials (e.g. paper to cardboard). It can also involve salvaging and reprocessing component materials from complex products.

Suppliers

Suppliers are usually the organisations with whom Unilever has direct contact for buying raw materials, but also applies here to organisations further down the supply chain who have direct relationships with farmers. These organisations are usually food processing businesses who run drying, freezing, pasteurisation, extraction, storage and refining facilities or factories. In some cases suppliers may be traders or Unilever may buy from suppliers *via* commodity markets.

Synthetic fertilisers

Fertilisers made from inorganic chemicals and minerals unlike organic fertilisers (manures, composts and other nutrient-rich materials which are derived from organic materials). Commonly used synthetic fertilisers include N:P:K compound fertilisers, urea, and TSP.

This Code / Code

This document, including all appendixes and implementation guides. The Unilever Sustainable Agriculture Code is intended as a guide to acceptable behaviour for all suppliers of agricultural raw materials to Unilever.

Total Cost of Ownership (TCO)

An estimate of the life-cycle costs of owning a product or asset, including the purchase price, any additional costs related to sub-optimal performance, and any additional training or maintenance requirements (for example, increased cost of handling out-of-specification product; damage to reputation; repacking or re-cleaning costs incurred by a product recall).

Unilever Business Partner Code

Code committing Unilever to establishing mutually beneficial relations with our suppliers, customers and business partners. Partners are expected to adhere to business principles consistent with our own. Available at:-
http://www.unilever.com/ourvalues/purposeandprinciples/business_partner_code/default.asp

Waste

Unwanted or undesired material or substance.

Water bodies

Any accumulation of water, including oceans, seas, estuaries, coastal waters, lakes, streams, ponds, puddles, ditches, wetlands, groundwater bodies and aquifers. Water bodies may be man-made or naturally formed. They may form on the Earth's surface or beneath it and they can either gather and transport water or they can store it. Some water bodies are naturally more sensitive to pressures and risks than others.