Principles & Practices for Sustainable Fruit Production

SAI Platform Fruit Working Group

SAI PLATFORM

Principles and Practices for Sustainable Fruit Production (version 2009)

Farmers aim to ensure that the safety and quality of their products will satisfy the highest expectations of the food industry and consumers. In addition, on-farm practices should ensure that arable and vegetable crops are produced under sustainable economic, social and environmental conditions.

To that aim, **this document provides a set of principles and practices for sustainable fruit production for the mainstream market in all regions of the world. This document is meant to be revised regularly on the basis of practical experience. It is also meant to be completed with specific guidelines and practical tools based on local innovations and adapted to local prevailing conditions (according to the region and its climates, ecological variables, farming systems, cultures etc) as well as respecting national laws and regulations.**

The **Basic framework** looks as follows:

1. **Item**. An item refers to an *object of management.*
2. **Principles** *identify the objective(s) of what should be accomplished* with regard to an item.
3. **Recommended Practices** provide a *set of identified non-exclusive tools and measures* that can be implemented to achieve the objective(s) of a principle.

It is important to note that good management of a farming system constitutes the grassroots of the system's economic, environmental and social sustainability. Therefore, it first pays attention to planning and managing well the overall farm system itself. This document's scope of management action is limited to what farmers or groups of farmers themselves can achieve.

Farmers shall have taken into consideration applying the principles and practices to the whole farm system within a philosophy of continuous improvement, starting with the crop or livestock in scope. The following headings and bullets summarise the sections and objectives when applied to a whole farm system. The individual sections in the document contain greater detail of practices.

Sustainable Farming Systems (chapter 1)

- Are varieties suited to the local climate, soil, pests & diseases being grown?
- Nutrients – how is crop nutrition calculated? How are nutrients stored considering environmental/safety risks?
- Pest management – Are all key pests known? Is IPM applied? Are pesticides stored safely & securely?

Economic sustainability (chapter 2)

- Is yield increase possible? Is food safety and food quality understood? Is the farm system diverse enough? Is there access to market information? Is group use of equipment. Or group purchasing an option?

Social Sustainability (chapter 3)

- Social & Human capital – including farm workers – Are workers treated fairly? Is training a priority?
- Local community /economy - Is there a positive impact in the local community from the farm system?

Environmental sustainability (chapter 4)

- Soil fertility/soil loss – how is soil fertility maintained, is soil erosion an issue?
- Water – Is total water use for irrigation known? How is irrigation amount calculated? Is the water source for irrigation sustainable? Are the impacts of fertilisers and pesticides considered?
- Biodiversity – Are there natural habitats on farm? Are rare species of plant/animal threatened by growing the crop?
- Energy – Are the major energy inputs known? How can their impact on climate change be reduced?
- Waste – Are the principles reduce, reuse, recycle, dispose understood? Are pesticides/fertilisers disposed of safely?

1. Sustainable Farming System

Item	Principles	Recommended Practices
1.1 Site selection and management	SF1. When planning and managing the farm activities, be aware of the site history (previous land use).	▪ A risk assessment shall be undertaken for new agricultural sites, taking into account the prior use of land, availability and quality of water resources, pest, disease and weed levels and the potential impact of the production on adjacent crops and the adjacent area. ▪ Production sites should be checked for any contaminant or pollution risk and protected against those through adequate buffer zones where necessary.
1.1 Site selection and management	SF2. When planning and managing the farm activities, properly take into account the site specificities (such as topography, neighboring activities, ecological and social conditions).	▪ Do not expand fruit plantations in protected areas nor in any part of high conservation value forests. ▪ Do not use open fire in ecological areas such as buffer zones and natural forests. ▪ Soil types shall be mapped for the farm and used to plan rotations, planting and growing programmes.
1.2 Sustainability management system	SF3. Maintain a functioning sustainability system on the farm, geared towards continuous improvement.	▪ The farm shall be managed in an organised way so as to ensure continuous improvement towards best sustainable production practices over time. ▪ The producer shall ensure that all people working on the farm are aware of the relevance of their specific responsibilities and contribution to the economic, social and environmental sustainability of the farm. ▪ Existing practices shall be regularly reviewed by the producer in view of adapting or changing them in order to improve the farm overall sustainability management system.
1.2 Sustainability management system	SF4. Record reliable information on farm inputs and techniques used on the farm.	▪ All documentation must ensure proper traceability from the production site to the delivery at client. Lot shall be defined together will client. ▪ Documentation shall be accessible any time for verification
1.2 Sustainability management system	SF5. Take the opportunity of accessing valuable information and support services to continuously improve the farm overall sustainability.	▪ Regular advice shall be sought by producers on how to get access to improved sustainable fruit production technologies and tools. ▪ In particular and when indicated, advice shall be sought by producers on how to access and make use of financial instruments and tools.
1.3 Planting material	SF6. Consider the farm's structure & local situation when choosing planting material.	▪ Preference shall be given to varieties, rootstocks or trees that are: - adapted to local conditions - resistant or tolerant to commercially important pests and diseases - meeting customers' requirements.

		▪ Planting material quality must be checked before use and be traceable to source. Records shall be kept of the variety name, batch number and vendor. ▪ If the planting material is produced on the farm, all the appropriate techniques enhancing its quality shall be used. ▪ Before growing fruit for consumption from any genetically modified plants, rootstock or grafting material, producers shall: - comply with all the regulations in place for both countries of production and consumption - consult for customer acceptance - verify that it does not negatively impact the sustainability of the growing systems. Fruit that originates from genetically modified plants, rootstock, or grafting material must be identified, traced and segregated. They must be sold with proper labelling and information to the buyer. ▪ Plant spacing shall be chosen to: - minimize the use of plant protection inputs - optimize fruit quality and homogeneity, - facilitate harvest.
1.4 Integrated crop management	SF7. Use rotation practices for annual crops as an important tool of integrated crop management and as a diversified source of income for the farm.	▪ Producers shall recognise the value of diverse crop rotations and seek to employ these whenever possible to maintain soil condition, minimize risk of nitrate leaching and reduce pest development in order to maximise plant health. ▪ In this view, assessments (where applicable) are recommended to determine pest and disease levels in the soil and help schedule crop rotations.
1.4 Integrated crop management	SF8. Use specific cultivation techniques to maintain or improve the physical and biological characteristics of the soil as well as to reduce mineralization and leaching of nutriments.	▪ Minimal cultivation techniques - rather than conventional ploughing and associated cultivations – shall be considered. ▪ Practices should focus on the following key areas: crop rotation, vegetative cover, maintenance of soil organic matter, avoidance of persistent pesticide residues, optimization of irrigation, etc. For example : – Soil should have a vegetative cover all year round. – Nitrogen binding leguminous plants and/or shade trees shall be used if appropriate.
1.4 Integrated crop management	SF9. Balance fertilization in order to provide the appropriate allowance of nutrients to the crops, taking into account release from other sources such as organic manures, soil organic matter etc.	▪ A cropping/nutrient management plan shall be developed to ensure that nutrient loss is minimised and meet the needs of the crop in order to optimize yield. It shall be based on : – risk analysis – soil, nutrient solution, and/or plant analysis, – type of crop and crop stage It shall specify fertilizer type and quantity as well as timing, frequency of the applications. ▪ Application rates of either mineral or organic fertilisers shall be in accordance with international, national

		and local legislations ▪ Nitrogen supply and timing shall be particularly well matched to meet crop demand as nitrogen leaching has significant environmental consequences. ▪ Optimum P and K balances shall be achieved as much as possible by rotational maintenance. ▪ Chopping and incorporation of crop residues as well as organic manure or compost shall be used to help improve soil fertility by increasing organic matter content, improving nutrient and water retention and reducing erosion. ▪ Manures and fertilisers shall be clearly marked and stored in a clean, dry location (preferably under cover), where there is no risk of contamination of watercourses, ▪ They shall not be applied to water logged, steep or frozen ground where there is a risk of run-off. ▪ Heavy metal build up shall be prevented by the use of good quality fertilizers.
1.4 Integrated crop management	SF10. Avoid using sludge. If sludge is used though, manage it very carefully on the basis of proper risk assessment.	▪ The risk assessment shall take into account levels of heavy metals and other chemical contaminants, microbiological analysis, presence of foreign matter, etc. ▪ Where considered a risk, industrial residue water or sludge shall not be spread on vegetation. ▪ Untreated human sewage sludge must not be applied to farm land. ▪ Any use of treated human sewage sludge on land destined for agricultural use shall be very carefully managed in accordance with national and local legislation.
1.4 Integrated crop management	SF11. Protect crops against pest, diseases and weeds with as little as possible reliance on pesticides. In particular, strive to use Integrated Pest Management (IPM) systems.	▪ Non chemical measures are encouraged to prevent and reduce pest, disease or weed infestation. ▪ These include indirect measures: choice of disease and pest resistant crop/variety, use of crop rotations, mechanical and physical methods of crop husbandry, good fertiliser and irrigation practices, etc. ▪ In complement, direct measures can be used to reduce pests, diseases and weeds to economically acceptable levels. These include: cultural and physical controls (e.g. mechanical weeding), biological controls (e.g. beneficial insects) and chemical controls (seed treatments, crop insecticides, fungicides, and herbicides). ▪ Regular visual inspections, thresholds or other recognised prediction systems shall be used to avoid application of routine preventative applications of pesticides. ▪ When the use of chemical pest treatments cannot be avoided, it shall be done according to the principles of Integrated Pest Management (IPM) - i.e. evaluating all available pest control options and selecting a method, or a crop protection product, that maximizes human safety, minimizes environmental impact and is economically justifiable. ▪ Alternatives to chemical fumigation have to be explored and prioritized before resorting to chemical fumigants. If used, it must be justified and documented. ▪ Trees shall be trained and pruned to achieve a manageable uniform size, a balance between growth and regular yields, and allow an optimal distribution of solar radiation and spray in the canopy. ▪ Chemical thinning and crop setting agents shall be used only when needed (too many fruitlets, risk of low pollination). Naturally occurring substances shall be used preferably.

		▪ Pruning material shall be removed from the field or chopped and buried in soil to avoid contamination of the following crop.
1.4 Integrated crop management	SF12. Chose, handle and store agricultural inputs with great precaution as per label instructions.	▪ Producers are only allowed to use agricultural inputs authorized for specific uses by legislation in the country of production and according to the client's requirement. ▪ Agricultural inputs shall be specific to the target (pest, disease or weed) and have minimal effect on beneficial organisms, aquatic life, workers, consumers and the ozone layer. ▪ In addition, it is recommended to adopt an anti-resistance strategy for pesticides to avoid the build up of resistance. ▪ Effective instructions and training shall be provided and measures taken, including use of appropriate equipment, to protect health and safety of farm workers who handle or are exposed to agrochemicals. Iinstructions shall highlight the legal aspects, use, storage, environmental and safety aspects and other precautions. ▪ All inputs shall be recorded and records shall include: crop name, target and justification, location of application, date of application, product trade name, operator name, and product quantity. ▪ Any toxic agricultural input shall be handled, transported with great precaution and stored separately on the farm and away from food or feedstuff, with locked access. ▪ Pesticide containers shall be disposed off properly and not be reused. Ideally, they shall be emptied, rinsed and with a hole in the bottom and taken off the farm by official recycling companies. ▪ All application equipment must be kept in good condition, and maintenance must be recorded. ▪ In case of aerial application: – Operating procedures, pilot and operator training, and permits/licenses must be established and obtained according to local aviation and transportation authorities and regulations. – Aerial applications must be undertaken in strict conformance with field re-entry intervals (REIs) and in coordination with farming operations. A communication method for field re-entry restrictions must be established between applicators, employees and visitors to the farming operation to ensure REI conformance. Aerial and ground applications must not be authorized for farms or growers not abiding with field re-entry restrictions. – Optimal time for application should be chosen as the preferred method to facilitate compliance with field access restrictions. – Drift minimization techniques, including use of guidance technologies (GPS), optimal flight and operating paths, and adherence to established weather parameters (low wind, low temperatures and humidity), must be followed and established in operating procedures

2. Economic Sustainability

Item	Principles	Recommended Practices
2.1 Safety, quality and transparency	EC1. Ensure the safety, quality and transparency of the products throughout the production methods and storage facilities.	▪
2.2 Financial stability	EC2. Seek to achieve long-term stability of the farm income for proper investments and workforce payment.	▪ Producers shall make sure to have access to relevant technical and market information and tools in order to optimize his/her economic return. ▪ Producers shall develop and implement a plan in order to achieve stable and optimal yields of products with the best characteristics - including safety and quality - that can be sold at best prices, while at the same time supporting the optimum cost - including lowest levels of waste and defects as possible.
2.3 Market	EC3. Seek to get organised and to select efficient trading channels in order to optimize benefits.	▪ Producers shall negotiate in open and honest terms attractive prices with their clients (optimum in quantity and quality), and try to develop long-term trading relationships with them. ▪ Producers shall consider getting organised in groups, if indicated, to get better access to support services and improve the position in bargaining prices. ▪ Timing of fruits deliveries shall be optimised and efficient trading channels selected to receive the best price for and share of the added value. ▪ Producers shall strive to be able to operate in an encouraging local and regional politico-economic environment.
2.4 Diversification	EC4. Seek to diversify the farm into other farming activities or/and possible non-farming activities if appropriate, in order to increase farm income and to reduce risk linked to market price fluctuations.	▪ Producers shall look to diversify the sources of income by diversifying their client base and/or growing alternative commodities on the farm, either for on-farm consumption or to be sold externally, as well as through the development of non-farming activities.

3. Social Sustainability

It is recognized that the majority of the farms are family run and family labour helping on the farm is often an essential component for the sustainability of the farm. In these circumstances, some of the principles might not fully apply. In any case, farms should comply with their national labour legislation, and if none exists, refer to the ILO conventions.

Item	Principles	Recommended Practices
3.1 Working conditions	SOC1. Provide a cordial and pleasant working environment, free of any type of discrimination[1] and free of disciplinary practices[2].	▪ Discrimination on the basis of ethnic groups, national origin, religion, disability, gender, sexual orientation, pregnant women, worker organisations or political affiliation with regard to contracts, compensation, training, promotion, dismissal or retirement of its personnel shall be strictly prevented. Positive discrimination should be allowed in countries where the law provides for measures to support positive discrimination for 'previously disadvantaged people' or 'minorities'. ▪ Same rights and obligations shall be conceded to women and men. ▪ Employees and workers shall not be asked to leave deposits or identity cards behind. ▪ Employees and workers shall have the right to freely practice their religion or fulfil their needs relating to race, national origin, religion, disability, gender, sexual orientation, membership in worker organisations or political affiliation. ▪ Behaviour, including gestures, language, and physical contact that is of a sexually abusive, coercive and threatening nature shall be prevented. ▪ Decent working conditions and dignity shall be provided to all workers regardless of their employment status.
3.1 Working conditions	SOC2. Farm workers and their families (if applicable) have access to suitable sanitary, housing and transportation infrastructures and services.	▪ Workers and their families shall be provided with suitable sanitary facilities and drinking water in sufficient amounts. ▪ Workers and their families, living on the farm, shall have access to medical treatment, nutrition and accommodation. ▪ If needed, dignified housing shall be provided free of charge or in accordance to local conditions. ▪ Suitable and hygienic facilities shall be provided for the preparation, storage and consumption of food.
3.1 Working conditions	SOC3. Provide recognised employment relationship to workers based on national law and practice.	▪ Daily working hours for registered employees shall not exceed the maximum number of hours set by national regulations. ▪ Registered employees shall be conceded for every six working days at least one day of rest, covered by their salary. ▪ Overtime work shall be demanded only in exceptional circumstances over a short-term period due to the

[1] as per ILO Convention 111 on Discrimination and ILO Convention 100 on Equal Remuneration

[2] as per the Universal Declaration of Human Rights

		business cycle, notably during the harvest season. Overtime shall be compensated adequately. ▪ Registered employees who have worked at the farm for more than one year shall have a period of paid leave.
3.1 Working conditions	SOC4. Ensure that workers' working hours comply with national and local laws. Overtime performed during peek season is acceptable but duly compensated.	▪ Workers shall be encouraged to know their status and, consequently, their respective rights and obligations under law. ▪ Day labourers and seasonal workers shall be managed in a way that is as close as possible with those applied to permanent employees. ▪ Regular employment relationships shall be established as much as possible. ▪ Working contracts or other appropriate working relationships shall be established, in accordance with national law.
3.1 Working conditions	SOC5. Ensure that wages and benefits received by workers comply as a minimum with local and national legislation.	▪ Wages and benefits of permanent employees shall meet or exceed the minimum required under local and national laws. ▪ Workers, especially temporary ones, shall be provided with clear information about the payment that they receive for their work. ▪ All employees and workers shall receive remuneration in accordance with their tasks and abilities while having equal work opportunities. ▪ Employees and workers shall be able to receive wages in legal tender/ currency. Compensation with merchandise, vouchers, tokens or any other symbolic means may be agreed upon with the employee or worker without creating any form of dependency. ▪ Deductions shall not be made from wages for disciplinary purposes.
3.1 Working conditions	SOC6. Ensure that working conditions comply with applicable laws as well as international Conventions and Recommendations related to occupational health and safety[3].	▪ Actions shall be promoted on the farm, which help prevent accidents and injuries of farm employees and workers during their duties. This equally refers to accidents and injuries of farm employees and workers as well as their families when living on the farm. ▪ Access shall be guaranteed to hygienic bathrooms and potable water for all employees and workers. ▪ Registered employees and their families shall be members of the national health insurance, if it exists. ▪ Adequate basic health services shall always be possible either through assuring access to existing facilities or through providing equivalent facilities at the site. ▪ Activities shall be promoted for the prevention of diseases, like vaccination, orientation in aspects of personal hygiene and nutrition campaigns. ▪ Medical check for worker.
3.1 Working conditions	SOC7. Do not use any form of forced labour[4].	▪ All forms of forced labour are prohibited as per ILO Convention 29 on forced labor and ILO Convention 105 on the abolition of forced.

[3] as per the ILO Encyclopaedia on Health and Safety

[4] as per ILO Convention 29 on forced labour and ILO Convention 105 on the abolition of forced

3.1 Working conditions	SOC8. Allow workers to form and join unions of their choice and to bargain collectively[5].	▪ Employees and workers shall have the right to form and join associations of their own choice without previous authorisation. ▪ Employees and workers shall be entitled to collective bargaining. ▪ Labour organisations shall be allowed to conduct their activities if employees and workers wish so. ▪ Workers' representatives shall not be discriminated.
3.1 Working conditions	SOC9. Do not use child labour[6].	▪ Producers shall be aware of the problem of child labour and monitor carefully the individual situation of each child permanently living on the farm who is under work minimum age referred by national laws. ▪ In particular, children under the work minimum age referred by national laws shall not be recruited as permanent workers or day labourers. ▪ For cultural and socio-economic reasons, children under the work minimum age referred by national laws shall be allowed to accompany their parents during harvesting periods. It shall be ensured that they are not forced to work, do not work long hours and are not exposed to hazardous or heavy work. ▪ The individual situation of the children involved shall be considered in relation to all actions implemented in order to eliminate child labour. All measures taken shall be designed to actually improve the living conditions of the individual child. ▪ Young workers under the age of 18 are shall not be exposed to situations in the workplace that are hazardous, unsafe or unhealthy, even more so than any other workers.
3.1 Working conditions	SOC10. Seek to assure children access to adequate education as well as to support the education of farm employees and workers.	▪ Children under the work minimum age referred by national laws, living permanently or temporarily on the farm, shall participate in educational programmes comparable with the formal school system. ▪ Education programmes for workers' children who are at school age shall be promoted.
3.2 Training	SOC11. Support the training of farm employees and workers on all aspects of sustainable agricultural practices.	▪ Permanent employees shall be provided with basic training and be competent on the following items: environmental protection; human health and hygiene; correct handling and use of substances or materials that are hazardous or harmful for human health; etc. ▪ In addition, the orientation of seasonal workers shall be promoted on issues concerning health, hygiene and protection of the environment. ▪ Literacy of all individuals at the farm who are not able to read and write shall be promoted. ▪ Producers shall strive to receive regular external advice, training and capacity building on the various aspects of farming in order to be able to increase the success of his activity over time. ▪ Employees and workers shall receive basic training in their area of work, especially if this involves handling of chemicals that can be hazardous to health, or if they work in the processing plant.
3.3 Local economy	SOC12. Contribute to provide economic benefits to local	▪ Preference shall be given to local communities with regard to recruitment of permanent and temporary personnel, thus contributing to the build-up of sustainable livelihoods.

[5] as per ILO Convention 87 on Freedom of Association and Protection of the Right to Organize and ILO Convention 98 on the Right to Organize and Collective Bargaining

[6] as per ILO Convention 138 and its accompanying Recommendation 146 on Child Labour as well as ILO Convention 182 and its accompanying Convention 190 on the worst forms of child labour

	communities.	▪ Producers shall strive to be active members in their community, trying to contribute to their further development. ▪ Producers shall look to collaborate with the local community on aspects of environmental protection, health, safety and basic professional training. ▪ Producers shall look to establish a continuous dialog with the local community, in order to share the experience gained with the implementation of the present norms.

4. Environmental Sustainability

Item	Principles	Recommended Practices
4.1 Soil	ENV1. Maintain good soil fertility and prevent damage to the environment, soil erosion and pollution.	▪ Soil erosion and loss shall be prevented by biological as well as mechanical control methods. ▪ Producers and workers shall match cultivation methods and timing to prevailing soil conditions. ▪ They shall avoid steeply sloping fields for cultivation or follow contours with operations for soil preparation. ▪ They shall also plant hedges to maintain the soil in steep areas especially, as well as use crops to cover soil in the rotation, as permanent covers or as winter cover crops.
4.2 Water	ENV2. Properly manage and optimise water use.	▪ An assessment of the hydrologic characteristics of the soil shall be performed before adopting any irrigation system. Overall, soil water shall be managed by drainage maintenance in wet climates and by soil moisture conservation practices in dry conditions. ▪ Water shall not be sourced if water supply is restricted. Advice on sourcing shall be sought from water authorities or a relevant consultant. Water extraction licences, where held, shall be complied with. ▪ Sources of water shall be regularly analysed for their microbiological, chemical and mineral content, and properly managed in accordance with the analysis results. ▪ Furthermore, irrigation shall be carried out only in situations when it can enhance the quantity and quality of plants and trees grown for optimum fruit quality and yield. ▪ The crop's water requirements shall be systemically assessed in order to set the time and volume of crop irrigation. ▪ Irrigation shall be adjusted to take into account predicted rainfall and evaporation. Therefore, daily rainfall records for outdoor production are encouraged to assist in planning irrigation schedules. In addition, producers are recommended to check regular meteorological forecasts to set irrigation schedule. ▪ The most efficient and commercially practical water delivery system shall be used. Drip irrigation is preferred, while spray irrigation shall only be adopted following planting or transplantation. In addition, water saving practices shall be adopted and water shall be re-used or re-cycled where possible, especially if water supply levels are at critical levels.

		▪ Finally, irrigation water usage records shall be maintained.
4.2 Water	ENV3. Properly manage the use of inputs and release of wastewater in surrounding water sources.	▪ Rinsing of spraying equipment shall be done appropriately to avoid contamination of soil and ground water. ▪ Sources of wastewater shall be regularly analysed for their microbiological, chemical and mineral content, and properly managed in accordance with the analysis results. ▪ Pollution of waterways on or near the farm shall be prevented. ▪ Where considered a risk, industrial residue water, sludge and untreated sewage water shall not be spread on the vegetation. ▪ Buffer zones adjacent to waterways shall be planted, maintained or restored, preferably with native species. ▪ Adequate buffer zones shall be set in case of aerial spraying. ▪ Finally, consideration shall be given to a water management plan to optimise water usage and reduce water waste, e.g. irrigating at night, maintenance to reduce leakage, storage of winter storm water, collection of rainwater from glasshouse roofs, etc.
4.3 Biodiversity	ENV4. Maintain or enhance biological diversity on the farm.	▪ The impact of current practices shall be assessed in terms of their contribution to the protection of fauna and flora diversity in the farm environment. ▪ It is further recommended to contribute to the creation of diverse landscapes on the farm. The objective is to create biodiversity habitats which can host a variety of flora and fauna playing a significant role in the prevention of and defence against pests and diseases. ▪ Farming in protected areas shall strictly comply with the regulations applicable to these areas. ▪ Restoration of vegetation is encouraged in degraded areas preferably by using native species.
4.4 Air	ENV5. Preserve or improve the air quality.	▪ Proper use of energy, inputs and farming equipment shall be made to minimize the release of greenhouse gases and atmospheric contaminants. ▪ Potentially harmful emissions shall be avoided.
4.5 Climate change	ENV6. Minimize adverse impacts on the global environment and climate change.	▪ On the basis of established mechanisms and available inputs, estimate and monitor greenhouse gas emissions (like methane, nitrous oxide, carbon dioxide) of the dairy herd and of manure storage as well as from other on-farm practices and off-farm inputs. ▪ Mitigate and minimise these greenhouse gas emissions.
4.6 Energy	ENV7. Properly chose and use energy resources.	▪ The farm shall strive to reduce the use of non-renewable sources of energy and increase the use of renewable sources of energy. ▪ In this view, it is recommended to perform an assessment of the different farm fields' energy requirements as part of the decision process. ▪ Field operations shall be combined and haulage distances optimized in order to save fuel. ▪ Farming equipment shall be selected and maintained for an optimum consumption of energy.
4.7 Waste	ENV8. Use crop by-products as much as possible on the farm.	▪ The farm shall continuously reduce, reuse and recycle the quantity of waste and by-products of the harvest and processing that it generates.

		▪ In particular, organic crop debris may be composted on the farm and reused for soil conditioning where there is no risk of disease carry-over.
4.7 Waste	ENV9. Properly handle, and if possible recycle waste generated by the farm.	▪ Untreated sewage water and other farm activity effluents shall not be used on the farm nor be discharged into natural superficial waters. ▪ Check appropriate treatment available. Treated sewage shall be spread in the field only under proper climatic and biological conditions, as per national and local legislation. ▪ Inorganic waste that is not recyclable, including chemical and toxic substances shall not be burned. They shall be handled appropriately. ▪ A plan shall be designed to identify all potential pollutants and minimize their use and waste. Emergency action procedures shall be in place in order to minimize the risk of pollution from accidents. ▪ Holding areas for diesel tanks and waste shall be environmentally safe.