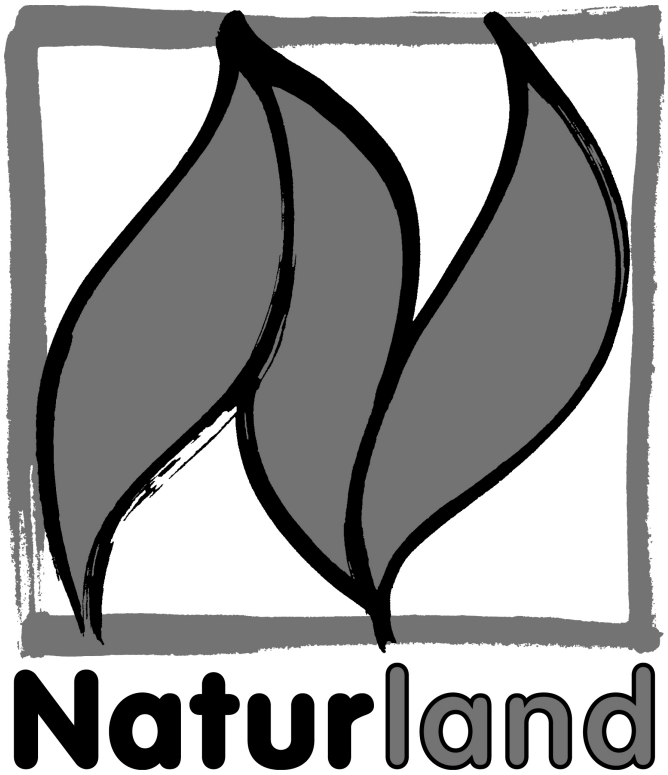

Naturland Standards on Production

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Preface

Certified organic agriculture, as practised in accordance with the written standards of Naturland - Registered Association for Organic Agriculture, has become an established concept. A comparison of the first draft of the "Standards for Organic Agriculture" passed in 1982 after the association was founded with the currently valid version will reveal two aspects of this modern form of land cultivation: on the one hand its dynamism and potential for development and on the other its stability and consistency. The development of standards and their implementation are the core mission of any certified association for organic agriculture. Standards have to be proven to be workable. They have to adapt to changing conditions and extended to cover new areas. The growth of Naturland and its organisations since the association's establishment is a reflection of the success of its work and confirms that this form of cultivation has gained wide acceptance among farmers, food producers and consumers.

Standards for specific areas

The Naturland standards existed long before the EU passed its first legal regulations on organic agriculture. Even today the consistent development of our standards provides major impetus; they incorporate ideas that are taken seriously by the legislators.

As they stand today, Naturland's standards are not limited solely to the specific method of cultivation described in detail in its standards on plant production and animal husbandry. For some years now, standards have been developed to cover many specific areas which require special guidelines, such as horticulture and viniculture, beekeeping, harvesting of wild grown products, and aquaculture. In the same measure that the standards have evolved to cover various forms of cultivation, they also incorporate the next stage - the processing of this produce. The production and processing of food produce, such as bread and bakery products, milk and dairy products, beer and sausages, etc. are described in specific standards for different categories of food produces. Whilst foodstuffs are the original sphere of interest, standards have also been drawn up to cover other areas of cultivation, such as organic forestry and timber processing.

Adherence to the elementary principles

To ensure that Naturland's standards develop consistently, it is essential that the fundamental principles of organic agriculture are adhered to. It is also crucial to withstand short-lived trends and any temptation to sacrifice elementary principles for the sake of immediate success. Standards can only provide a framework, since organic agriculture cannot function on the basis of mere regulations. It is realised by consensus on a common aim. Nevertheless, exact and binding rules are necessary in practice, whilst leaving enough flexibility for adaptation to the particular requirements of each agricultural operation.

The experts - farmers, consumers, processors and scientists - who contribute to the development of Naturland's standards have always offered new solutions to the problems posed. The framework of Naturland's standards is dictated by the core fundamental principles of certified organic agriculture: the obligation to treat the elementary basics of our lives with prudence and responsibility. A common starting-point, sustained management, the active protection of nature and the climate, safekeeping and preservation of the soil, air and water and the protection of the consumers are at the heart of all Naturland's standards. This also includes mutual tolerance and respectful terms of co-existence.

Naturland's standards - the basis for certification

Standards will only endure and make a lasting impact if they can be clearly monitored and be put into consistent practice. Any decisions involved have to be seen to be made impartially and on neutral, unbiased terms. This is guaranteed by calling on the services of independent and autonomous committees - standards committee, inspection body and certification committee - as well as by the composition of the committees - consisting of diverse interest groups such as scientists, agriculturists and consumers. Independent inspection procedures and the consistent application of Naturland's standards form the basis of the production of high quality products cultivated in a balance with nature and the environment. This quality is visibly documented by the Naturland® logo.

Naturland's quality management - national and international

The Naturland association is a member of the international umbrella organisation IFOAM, which issues binding standards in the fields of both production and processing. The accreditation by IFOAM confirms that Naturland's standards and the certification procedures fulfil the strict requirements of IFOAM.

For producers, processors and consumers, accreditation by IFOAM is proof of an international level of quality management, reliability concerning the certification of organically grown produce, from its cultivation to the finished product. Naturland was the first German certification organisation for organic agriculture to complete the IFOAM accreditation programme successfully, and has been accorded accreditation by IFOAM since 1997.

Part A. General Regulations for production

I. Contracts and certification procedures

1. Conditions to be fulfilled prior to the conclusion of a producer contract

Prior to the conclusion of a producer contract, the association must be given the opportunity to acquire comprehensive information on the external and internal conditions of the farm.
The producer is obliged to provide any information necessary to assess the conversion conditions. This includes particularly the method of management that has been practised to date (use of mineral fertilizers, management of synthetic chemical pesticides, soil management, etc.), the economic situation and the environmental conditions (sources of potential contamination, e.g. sewage sludge, traffic and other causes must be reported before conversion can begin). If possible causes of contamination with dubious or harmful substances are detected, analyses have to be carried out prior to the conclusion of a producer contract. These analyses may show that a producer contract is only possible under specific conditions or not at all. A comprehensive description of the areas of land cultivated and of the production and storage sites has to be made.

2. Producer contract

On signing the producer contract, the producer commits himself to adhering to Naturland standards and to extending the conversion to all areas of the farming unit that are managed or farmed under his responsibility (whole farm conversion).
The principle of the manager's unit is to be applied, i.e. one and the same farm manager must not manage a conventional and an organically operated farm at the same time[1].
The conclusion of a producer contract is possible at any time of year.
The conclusion of a producer contract does not entitle the producer to the use of the Naturland® logo. A separate license agreement has to be concluded for this.

3. Standards

These standards are obligatory for all producers that have concluded a producer contract with Naturland e.V. (registered association). They have been tested and put into practice in this form. If single regulations or parts of these standards should not be applicable under different climatic conditions, the Naturland standards committee has to draft an amendment/addition to the standards which has to be passed by the assembly of delegates. Every member is entitled to submit amendment proposals to the standards committee, provided that further Naturland members (minimum of 10) support this proposal. Amendment proposals will be legally evaluated by the standards committee and submitted to a competent group of professionals for comment.
Naturland's certification committee is entitled to allow a contractual producer to diverge from Naturland standards in one or two respects, where the exception is justified, and for a limited period of time, provided that the general management of the agricultural operation according to Naturland's standards is not adversely affected.
Only the latest version of the standards as passed by the assembly of delegates is in force. The Naturland association will inform the contractual producers of any changes.
If the standards are changed, transition deadlines can be set for the implementation of these changes by the producers.
Violations of the standards will be prosecuted according to the sanction catalogue (producer contract appendix IV).
The validity of higher state laws and regulations remains unaffected by these standards. The requirements of the regulation (EEC) No 2092/91 (EU regulation Organic Farming) and the subsequent amendments, particularly regulation (EC) No 1804/99 (Regulation for the incorporation of animal production) have to be observed.

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[1] manager's unit: composed of manager and farming unit. The manager is the natural person or legal entity running a farm independently and responsibly (farm manager). The farming unit is a clearly marked managing sphere on which distinctly separate records are kept for inspection and documentation.

4. Conversion

During conversion to organic agriculture, the manager introduces management practises in accordance with the principles of organic agriculture throughout the entire operation.
The conversion of the entire farm must occur under economically acceptable basic conditions. It can therefore take place gradually to cover ever greater areas of the farmland and the operation cultivated in accordance with the standards. However, the time span for conversion set down in section A I.9 of these standards has to be complied with. Where conversion is carried out gradually, it is imperative for the areas under various stages of conversion to be clearly and explicitly distinguishable and separated. The same applies to animal produce; organic and conventional feeding and husbandry at the same time within one animal species are not allowed.
Converted areas and stalls resp. animals may not alternate between organic and conventional farming.
The process of conversion will be attended by an adviser authorised by the Naturland association. In co-operation with the adviser, a conversion plan has to be devised. This will contain a plan for crop rotation which includes the areas of land and the crop to be converted annually, a humus analysis and a fertilisation programme scheme as well as a plan for animal husbandry (stocking rate, feeding plan, assessment of the animals' needs). The Naturland association has the right to request current soil analyses.
It is possible to commence conversion at any time of the year.

5. Changes in the farming system

If new fields (e.g. purchase or lease of land) are taken under organic cultivation on a farm that is in conversion or already certified, these areas too have to comply with the usual conversion period (see A. I.9. of these standards). These new areas have to be clearly distinguishable and separated according to their stage of conversion.
The farm is obliged to report any factors that may have a negative influence on the quality of the produce, in particular any possible sources of contamination.
The marketing deadlines according to section A. I.9 and the regulations under B. II.3. of these standards apply to brought-in animals and to the respective conversion periods.

6. Documentation and inspection

Naturland e.V. must be provided with the latest data (e.g. livestock, cultivation). The product flow (e. g. brought-in feed, seeds and plant material and fertilizers as well as the sale of produce) has to be recorded according to Naturland's specifications. In addition, the farm must maintain livestock records (e. g. on the input and output of livestock, use of medication). Previously announced and/or unannounced visits on site and inspections by Naturland's representatives will be made at least once per year to check on compliance with the standards. These representatives must be given full access to and insight into all relevant information concerning the agricultural operation. Any documents requested concerning the management of the farm have to be shown, and all relevant questions have to be answered. If third parties act on behalf of the farmer (e. g. in the preparation, storage, processing and transport of the produce), the farmer has to take measures (such as the conclusion of a sub-contracting agreement) to ensure that the standards are implemented and that they can be monitored by Naturland.

7. Certification

The Naturland certification committee confirms that the producer is adhering to the standards with the annual certification letter. If the producer violates current standards, the penalties listed in the catalogue of sanctions, which is part of the producer contract, can be imposed.

8. Approval

Approval of the enterprise documents the successful conclusion of the conversion period and will be granted by the Naturland certification committee (CC).
The period for conversion of the whole farm until approval takes at least two years. In the case of gradual conversion, it takes five years at the most. The conversion period for the operation as a whole has to be concluded at the latest by the sixth harvest after commencement of the conversion period.
Prior to the approval of a farm, all areas of land must have been cultivated in accordance with the standards for a period of at least two years. The applicable Naturland standards on animal husbandry and all other forms of farming must also have been implemented where relevant.
Another prerequisite for certification of a farm is proof of sufficient knowledge and ability in the field of organic agriculture. Apart from practical work experience, participation in one of Naturland e.V.'s introductory seminars is mandatory (not applicable in all countries).

9. Labelling and marketing

The labelling of products enables the trader legally responsible for the product to be identified.
The application of the Naturland® logo is regulated in a particular licence agreement with the Naturland® Trademark Company.
For products which have been produced in compliance with the Naturland standards and which are to be marketed with reference to the organic production, to Naturland or with the Naturland® logo, the following deadlines and conversion periods for management in compliance with the standards must be adhered to:

Vegetable products
24 months prior to their having been sown or 24 months prior to the beginning of growth in feed crops.
36 months prior to the harvest in the case of permanent crops (except feed crops).
The starting point considered as management in compliance with the standards is that following the demonstrable conclusion of management measures not complying with the standards, at the earliest, however, from the date of the farm being subject to the inspection procedure.
It is only permitted to label vegetable produce as a **conversion product** - with a respective note - if the product consists of one sole ingredient of agricultural origin and comes from an area of land that has been cultivated in compliance with the standards for at least 12 months before the harvest of the respective ingredient.

Animal products

eggs:	6 weeks
milk:	6 months
meat:	
- poultry	10 weeks
- pigs:	6 months
- small ruminants:	6 months
- cattle:	12 months, at least three quarters of their lifetime
honey:	see chapter X. Beekeeping (separate standards)

Animal products may only be labelled if the farm has been in conversion for at least 12 months and the above mentioned marketing deadlines for the respective products are met.
With conversion of the entire farm at the same time the conversion period will be reduced to 24 months altogether.
Beef may only be labelled with the Naturland® logo or with reference to Naturland® or with reference to the Naturland standards under the condition that the respective animals have been born on an organic farm.
In addition, the conditions listed under part B. II.3 have to be observed for brought-in animals, and for beekeeping the conditions of the separate standards for beekeeping have to be observed (see chapter X.).

II. General (management-) regulations resp. other predominant provisions

1. Storage

Storage under special conditions (controlled atmosphere, temperature control, humidity regulation and drying of the stored goods) is permitted. The application of chemical storage-protection agents is prohibited. Only storage measures that exclude the contamination of the harvest with harmful substances are permitted. This also applies to the materials and detergents used (ref. the regulations of Part C. General Processing Standards III 7., where they apply to pest control). After-ripening by means of chemical substances[2] and the application of sprout inhibitors and radioactive irradiation are prohibited.
If there are products of different certification statuses on the farm, they have to be stored clearly and separately. Substances which are prohibited by these standards and contravene the conversion status in question may no longer be stored on the farm (ref. also Part C General Processing Standards III 5. Storage, Bottling, Bagging and Transport).

2. The sale of purchased merchandise

The sale of purchased products for direct marketing, i.e. in farmhouse shops, on market stalls and the like, is possible. Regional products should be preferred wherever possible. Separate bookkeeping for all the purchased merchandise has to be done. The labelling of the products must be unequivocal with respect to their origin and method of production. Farm products and bought products have to be declared separately.
Conventional merchandise may only be sold if there is proof that equivalent organic products are not available. These products have to be clearly labelled as "conventionally produced".
It is not permissible to offer one and the same product from organic and conventional cultivation at the same time.

3. Purchase of means of production and equipment

If means of production (seed and plant materials, farm manure, feed) or animals are purchased, they must be certified by Naturland or meet certification standards approved as equivalent by Naturland. If these are not available (the farm manager has to give notice and proof of the non-availability), the means of production can be obtained – **in exceptional cases and for a limited period of time** - from other farms according to the following priorities[3]:

- inspected according to EU regulation Organic Agriculture
- extensively farmed within an accordingly inspected programme
- conventionally farmed.

Special attention has to be paid to the ecological impact of production means and equipment. Preference is to be given to substances on a natural basis (e.g. oils, fats). Auxiliary materials of rainforest timber are prohibited. Care should be taken to save energy.

4. Exchange of farming equipment between different agricultural operating systems (certified organic/conventional)

The exchange of farming equipment (e. g. in machinery co-operations) between certified organic farms and conventional farms is possible. Farming equipment that is also utilised by conventional farms must be cleaned thoroughly in the case of contamination with substances that do not comply with Naturland's standards before being used on a Naturland® farm.

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[2] Ethylene gas may be used for after-ripening.

[3] The regulations of the EU-Reg. on the purchase of conventional products have to be observed.

5. Use of foil and fleeces, nets and technical mulching materials

Decomposable matters are to be striven for, e.g. cotton, flax mats, mulching paper or organic foil, as far as these allow a reasonable organic cultivation.
For protected structure coverings like plastic mulches, fleeces, insect netting and silage wrapping, only products based on polyethylene (PE) and polypropylene (PP) or other polycarbonates are allowed. These shall be removed after use and shall not be burned on the farmland. The use of polyvinyl chloride (PVC) based products is prohibited. Recycling is recommended.
Materials that are on the farm already and do not comply with these conditions may be used up during the conversion period.

6. Non-employment of GMO and GMO derivatives

Genetically modified organisms (GMO) and their derivatives are incompatible with organic cultivation. Products that are produced in compliance with these Naturland standards must be made without the employment of genetically modified organisms (GMO) and/or GMO derivatives. A "GMO derivative" is any material which is produced from or by GMOs but does not contain GMOs. "Employment of GMO and GMO derivatives" means their employment as foodstuffs, food ingredients (including additives and flavourings), processing aids (including extraction solvents), fodder, compound fodder, feed materials, feed additives, processing aids for fodder, certain products used in animal nutrition, plant-protection products, fertilizers, soil improvement agents, seeds, vegetative reproduction materials and animals. The non-use of GMOs and/or GMO derivatives applies directly to the whole enterprise.
The unintentional contamination of organic produce by genetically engineered organisms may also have an influence on the certification status.
Any statements on genetic engineering which are made in connection with the standards (e. g. on the packaging) are limited to the phrase "No GMOs used".

7. Quality assurance

Production in terms of these standards should allow for organic produce of high sensory quality and safety in regard to health. To avoid contamination (e. g. through driftage) with prohibited substances or means which might impair the organic quality, appropriate measures shall be taken. Where reasonable suspicion exists that the product quality is substantially impaired through contamination, Naturland should be informed. Naturland may require an analysis to be undertaken to detect the level of contamination and contamination sources and follow up on the case. Appropriate action has to be taken on complaints related to the compliance with Naturland certification requirements that are directed to the operation by third parties. Records shall be kept of the complaint and the corrective action taken.

III. Social responsibility

The holistic claim of Naturland standards also includes the social treatment of the people who work and live on the farms.

1. Employment conditions

Workers for the purpose of these standards are, besides the permanent workers, also seasonal workers and sub-contracted workers.
All operations with at least 10 workers commit themselves to meeting the following requirements[4].

1.1. Contracts

All workers receive a written contract of employment describing the basic conditions of employment.[5] Working conditions and contracts have to be documented by the employer to be verified at any time. The employment contract shall at least define the following: job description, scope and limits of the job, and type as well as amount of remuneration. The employment conditions of all workers have at least to comply with the respective higher of the requirements of national regulations and ILO standards.

1.2. Equal treatment

The different kinds of employment shall in no case result in the unequal treatment of any workers: all workers are considered to enjoy the same rights and working conditions including social benefits and other privileges for work of the same nature and same degree of responsibility (see III.5).

1.3. Wages

Workers shall be paid at least the official national minimum wage or the relevant industry standard when dealing with processing operations. Workers shall be paid in cash, or in the mode they are favouring.

1.4. In kind payment

Workers may receive if they opt for it part of their wage in kind for services such as housing, food or others offered by the operation. The value attributed to such deductions shall be fair and reasonable. Compulsive deductions from the minimum wage/or relevant industry wage for such services are not permitted.

1.5. Working hours

To permit flexibility and overtime in the peak season (e. g. harvest) an annual limit of working hours or a mutual agreement about overtime requirements for a maximum 6 weeks peak period are necessary. Such an agreement has to be in line with current national labour legislation and ILO Convention C184.

1.6. Social benefits

The employer ensures basic coverage for maternity, sickness and retirement. Operations with more than 10 workers need to have a policy on social justice (wages and social benefits) available to all workers.

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4 Operations with fewer than 10 workers are exempt from the guidelines under point III.1. However those operations are subject to the requirements as from point III.2.
Naturland may determine that in any one country the legal control of employment conditions suffices to ensure compliance with these standards.

5 Legally binding contracts (in this particular case not necessarily in writing) are required even for workers not registered. Furthermore they have to be informed of their rights.

2. Human rights

The basic rights of the people living and working on Naturland operations are respected as described in national regulations or the International Labour Organisation Conventions and Recommendations (ILO)[6], and the UN conventions on children's rights[7], should these be more comprehensive.
A product created under conditions violating basic human rights or under gross violation of social justice can not be traded as a product certified by Naturland.

3. Forced labour

The operations commit themselves to exclude forced labour or any type of involuntary work. The operation shall not retain any part of workers' salary, benefits, property, or documents in order to force workers to remain on the farm.

4. Freedom of association, access to trade unions

All workers have the freedom of association and collective bargaining.
No one shall be discriminated against because of his or her membership in a trade union.

5. Equal treatment and opportunities

No discrimination on the basis of race, creed, sex, or political opinion or membership shall be tolerated. All workers, irrespective of their sex, skin colour or religion receive the same pay and face the same opportunities for work of the same nature and same degree of responsibility.

6. Child labour

The help of children on the operation shall not put at risk their education. Children working on the operation shall only perform work appropriate to their age and shall not be engaged in work that is hazardous or dangerous to their health and safety or does jeopardise their educational, moral, social and physical development, also in terms of working hours [8].

7. Health and safety

All workers, employees and their families shall have access to drinking water, food, accommodation and basic medical care.
The employer is responsible for safety and health at the workplace. If necessary, this implies instructing workers about safety at work. Operations with more than 10 workers have to draw up a policy on safety at work.

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6 http://www.ilo.org/ilolex/german/docs/convdisp1.htm

7 http://www.unhchr.ch/html/menu3/b/k2crc.htm

8 The work of children has to be limited in such a way that the daily workload including time for school or further education does not exceed 7 hours (for those aged between 12 and 14) or 10 hours (for those aged between 15 and 17) respectively.

Part B. Regulations for individual branches of production

I. Plant production

For all management practices of plant production, the following **general principles and regulations for plant cultivation (B. I. 1-7)** are obligatory:

1. Humus management and fertilization

The transformation processes of biologically active soil are the prerequisite for the balanced nutrition of crops. In order to ensure long lasting soil activity and thus crop yields, special attention has to be paid to the basis of soil fertility:

- The humus balance has to be at least at an equilibrium within the margin of varied crop rotation. For permanent crops, this has to be guaranteed by adequate measures such as undersown crops, catch crops, or permanent ground coverage.
- Biodegradable matter of microbe, vegetable or animal origin forms the basis of fertilization.
- Given the importance of a balanced lime level for topsoil stability, for the structure and thus the fertility of the soil, and because of acid absorption through precipitation, special attention has to be paid to an adequate lime supply with respect to the area.

Synthetic chemical nitrogen fertilizers, Chile saltpetre and urea must not be used. Mineral and trace element fertilizers that are not easily soluble (see appendix 1. 1.5) can be used after consulting the adviser. Their application is based on the corresponding soil analyses, observation of plant growth, and the nutrition balance of the whole farm (the so-called Hoftor balance sheet).
The amount of farm manure depends on the forage production of the farm and the resulting animal husbandry. The manure has to be processed to make it tolerable for soil and plants. In the case of semi-liquid manure, this is achieved by the use of stone or straw meal, dilution, ventilation or comparable measures. In the case of dung, a controlled process of decomposition is recommended and can be insisted upon by the adviser if the dung is of inferior quality.
Nutrient losses during storage and the application of liquid fertilizers and dung have to be reduced to a minimum. Environmental pollution (this includes odours and pathogenic agents) has to be avoided. Sufficient storage capacity must therefore be available so that manure is only applied as and when required by the crop and during the vegetation period.
The purchase of organic manure does not primarily serve the purpose of fertilization but is designed to increase the humus supply. Intensification beyond a tolerable extent (over-fertilization) has to be avoided. If the farm has its own livestock, the amount of manure bought in must not exceed a total of 1.4 DU/ha (dung units per hectare), whereby the manure has to be distributed evenly according to the crop rotation over the areas cultivated. The amount of organic manure purchased must not exceed 0.5 DU/ha in any one year. For horticulture (B. III), cultivation of ornamental plants, herbaceous perennials, shrubs, Christmas trees (B. V), fruit cultivation and viniculture (B. VI and B. VII) separate provisions apply.
Furthermore care should be taken that the animal runs are not over-fertilized. The number of animals kept and the quantity of feed produced must correspond in such a way as to avoid over-use of the land e.g. over-grazing, with the consequence of damage to the soil (e.g. by erosion).
Ploughing nutrients back in the soil using green compost is recommended on the principle of the recycling of nutrients if it is certain they do not transport harmful residue (Appendix 1.2; Appendix 9). Their application is permitted only after explicit approval by Naturland e.V.
Waste and/or urban compost, faecal and sewage sludge are prohibited.
Permitted purchased manure and soil improvement agents are listed in appendix 1.

2. Pest, disease and weed control

To encourage healthy plants, prophylactic measures such as crop rotation appropriate to the site in question, tillage, humus management and fertilization, the choice of appropriate stand densities as well as the selection of healthy and resistant plants and seeds are the most important considerations. In greenhouses the optimum climatic regulation as well as the application of beneficial insects are to be accorded particular importance. The self-regulating potential of an ecological system has to be backed up by landscape management and other methods appropriate to the protection of species, for example planting hedges and installing nesting sites and humid zones.

The use of synthetic chemical substances is prohibited. A list of the plant-protective agents permitted is given in appendix 2.
Weeds are, as accompanying plants of crops and as the habitat of fauna, a prerequisite for a varied community of species. The aim of regulation is therefore the containment of weed infestation to an extent tolerated by the crops being cultivated, and not the complete elimination of the weeds. Apart from prophylactic crop management measures, direct intervention in the form of mechanical (e.g. currying, hoeing) and thermal (e.g. flaming) processes is permitted. Besides this, further measures like mulching and grazing (especially in Christmas tree cultivation) can be resorted to.

3. Seed and plant materials (incl. vegetative propagation material)

The seed and plant material applied must – as far as available – be certified by Naturland or meet certification standards approved as equivalent by Naturland[9]. If this is not available the farm manager has to give notice and proof of its non-availability.
The use or dressing of seeds or of plant material with synthetic chemical pesticides is not permitted.
The seed and plant materials used may only be treated with the substances listed in annexes 2. 2.2 and 2.3. When using dressed seeds (pilled or in sheet form), care should be taken that the materials used in this process are considered harmless under these standards.
The strains cultivated (their combination with undergrowth, growing methods) should be suitable to local conditions. Criteria are primarily low susceptibility or greatest possible tolerance of and resistance to diseases. In the selection of strains and varieties, care must be taken that genetic variety can be guaranteed.

4. Tillage

The tillage process shall be such as to conserve the natural layers of the soil structure. This is done by employing the appropriate machinery. Special attention must be paid to the adequate humidity of the soil during the tilling process.

5. Landscape management

An ecologically managed farm - as a component of the natural environment - is especially dependent on an intact ecological system. The farmer is therefore obliged to conserve and, if required, to recreate structural elements of the landscape, such as hedges, borders, humid areas, oligotrophic grassland and other elements. This applies especially to large field units and serves the promotion of beneficial organisms and the self-regulation of the eco-system.
Because cultivation and animal husbandry are appropriate to local conditions, organic farming methods are especially suitable for use in sensitive areas (e.g. protected water conservation areas). By creating extensive bands of grassland as buffer zones alongside unstable ecological systems (e.g. rivers and lakes), precautions are taken against potential soil loss and nutrient input.

6. Soil and water conservation

The burning of organic matter (e.g. slash-and-burn, burning straw) is only permitted in exceptional cases. The clearing of primary forest and the cultivation of primary organic systems (e. g. tundra) is prohibited. Measures suitable to avoid the erosion of soil must be taken.
Excessive exploitation and exhaustion of water resources is not allowed. Wherever possible, rain water is collected and used and the effects of the amount of water removed from water sources monitored. The way water is used and the other farming methods employed make only a negligible impact on the water quality. The farm management must avoid the salination of soil and water.

[9] The aim is to obtain seed and plant materials from organic origins only by 31st December, 2006.

7. Crop production

Crop rotation is the basis of agricultural plant production on which the biological cycle in organic agriculture is founded. It serves the purpose of creating long lasting soil fertility and controlling the weeds, diseases and pests at the same time. It provides the farm with good yields and economic stability, thus ensuring long-term viability. For this reason, a minimum of one fifth of the crops on the arable land have to be legumes. This proportion may be reduced with the approval of the adviser, if either the conditions are very good (to at least one sixth), or if the location is particularly susceptible to the loss of nutrients.
During crop rotation, winter and summer crops should complement each other in their effects to prevent the negative developments of monoculture. Variety is an essential characteristic of organically cultivated fields. It should also be practised in the choice of seed mixtures for forage growing as well as for catch crops and undergrowth.
Special attention has to be paid to ensuring sufficiently long periods between the cultivation of the same kind of crops.
The washing out of nutrients must be prevented by suitable cultivation measures (e.g. undergrowth, ploughing rotas commensurate with local conditions).

II. Livestock production

As far as the present Naturland standards do not lay down any further requirements the guidelines of regulation (EC) No. 1804/99 are valid as a minimum standard. The animal stocking density permitted is listed in annex 4.

1. Animal husbandry

1.1 General requirements

The husbandry conditions must enable the animal to behave in a way natural to the species. This applies to movement, resting, feeding, social and reproduction habits as well as all other behavioural needs of each particular species. Open cow-sheds and pens meet these requirements to a greater extent than other systems.
There has to be sufficient bedding for all the animals, where straw or comparable materials (e. g. litter meadow cutting, hay, spelt glumes) have to be used. As far as it is available, straw from other certified organic farms or from areas of a low cultivation intensity must be used.
Stables with a fully perforated floor, fully slatted floors, cage rearing and flat decks are not permitted since they do not correspond to the animals' needs; at least 50% of the floor has to consist of solid material (i. e. no gaps or the like). Sheds must provide sufficient lighting and a good climate, e. g. temperature, humidity, fresh air, the avoidance of harmful concentrations of dust and gasses. Where artificial lighting is also used, a continuous nocturnal rest period corresponding to the animals' needs must be possible. The proportion of the resting area to total area must be sufficient to allow all the animals to rest at the same time.
Restructuring and the erection of new buildings have to be done in the light of the latest knowledge on animals' needs, and must be executed in agreement with the Naturland adviser. Stanchion pens are not allowed in new buildings. Harmful substances are to be avoided when choosing the construction materials and their treatment.
The animals must have outdoor access and/or access to grazing land[10]. Depending on the animals' needs suitable means of protection against from extreme weather conditions while grazing have to be provided. Farm animals have to be protected from their natural enemies living in the wild.
For all animal species the minimum sizes for sheds and outdoor access areas as per appendix 5 have to be observed[11]. Where the shed and outdoor access areas are not clearly distinguishable, the requirements for total access areas must be met. The permissible stocking density as per appendix 4 must be observed.

1.2 Cattle

The husbandry system for cattle should aim to meet the animals' need to move about freely and be stimulated by the light and climatic conditions in the cow-shed. Loose housing stables with a year-round outdoor access, possibly with a grazing area, therefore take preference. If in loose housing stables without access to grazing areas the animals must have outdoor access all year round[12].

1.2.1 Dairy farming

It is prohibited to keep the dairy cattle tied up permanently.
They must be given the opportunity to graze (throughout the grazing season) or to go outdoors the whole year. In new or restructured sheds, slatted floors in the walking area must consist of broad slats. Special attention has to be paid to careful construction. Where slatted floors already exist, missing slats in the walking area have to be replaced.
Where the animals are tied up, their natural lying and standing habits have to be considered. The use of electrical aids to condition the cow in its movements is prohibited.
Loose housing sheds must provide a feeding and a resting area for every cow. It is permissible to have feeding areas smaller than would correspond to the number of animals kept, if the feed is constantly accessible.

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[10] Only mother cows, fattening animals and young stock in sheds with the possibility of free movement are exempt from this mandatory requirement of outdoor access for a limited period of up to 2010.

[11] For sheds built prior to 24th August, 1999, the transition period for the minimum sizes and stocking densities is 2010.

[12] For mother cows, young stock and fattening animals there is transition period of up to 2010 in this case.

1.2.2 Cattle fattening and rearing

It is not permitted to keep the animals tied up permanently. Young stock and fattening animals must have an opportunity to graze (throughout the grazing period) or to run free all year round[10]. The specifications for solid floors indoors for resting and moving as well as the nature of the partially slatted floors also apply to fattening animals (see 1.2.1). To guarantee that the animals' need to move freely can be fulfilled, the calculation of stocking density in loose housing sheds must be calculated according to the animals' weight.

1.2.3 Calves

The box system must correspond to the growing animal's special need to move freely, and must create an appropriate climate in the shed. It is recommended to allow the calve to suckle from the mother cow in the first days after its birth (calving pen). Keeping the calves tied up as well as keeping them in isolated box, one per box, is prohibited. Calves may only be kept separately if social contacts to the animals of the same species are given in the form of sight or touch; the necessary sizes of the cubicles can be found in appendix 5[13]. If after the eighth week of their life there are at least five calves of approximately the same age, they have to be kept in groups. Dehorning is not recommended. However, to prevent injury, it may be justifiable on certain farms.

1.3 Sheep and goats

The minimum requirements of dairy farming also apply to the keeping of small ruminants. It is not permissible to keep the animals tied up permanently. Fattening animals and mother animals must have an opportunity to graze.

1.4 Pigs

Breeding sows must have an opportunity to move about freely (and possibly to graze and wallow) wherever local conditions permit. It is forbidden to keep them tied up. Empty sows and sows during early pregnancy must be kept in groups relative to the number of livestock. When sows are farrowing, it is permissible to restrict their moving space up to 14 days.
Sows with farrows should be placed in groups as early as possible. In the case of larger stocks with a boar, these must have contact to the brood sows.
Weaned piglets must not be kept on flat decks or in farrow cages.

1.5 Poultry

Rearing in cages is prohibited.
The runs must provide sufficient natural lighting. Artificial lighting has to be switched off for at least eight consecutive hours a night.
Litter has to be strewn over at least 33% of the base of the run so the poultry can scratch. Appropriate litter material is of organic substances such as straw, spelt glumes and additives such as stone meal and sand.

The requirements as per appendix 7 have to be observed; for runs built prior to 24th August, 1999, there are transition periods until 2010.

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[13] For boxes built prior to 24th August, 1999, only, there is a limited transition period until 2010 during which the following minimum floor spaces are valid:
Where calves are kept one per box::
- minimum 1 square metre per calf during the first two weeks of its life
- minimum 1.6 square metres per calf until the eighth week of its life (1.8 square metres per calf if there is a feeder on the inside)
- minimum 2.2 square metres per calf after the eighth week of its life (2.4 square metres if there is a feeder on the inside) (only if there are not at least 5 calves of the same age)

Where the calves are kept in groups::
- minimum 1.5 square metres per calf up to 150 kg live weight each
- minimum 1.7 square metres per calf up to 200 kg live weight each
- minimum 1.8 square metres per calf over 200 kg live weight each

1.5.1 Laying hens

It is not possible to rear laying hens without providing free outdoor access. During the daytime, the hens have to have permanent free outdoor access.
An outdoors area divided in two segments, i.e. one covered and one grassland, meets the requirements of the animals' natural behaviour and the hygienic conditions in an ideal way.
The covered forecourt has to be accessible throughout the year (i.e. even when the weather is bad) and provide places for sand- and dust-baths.
The grassland area can be used by the animals when the weather permits, and provides sufficient shelter in the form of trees, bushes and the like.
The required outdoor access areas are 4 square metres per hen[14]. When calculating outdoors areas, only those areas within 150 metres of the hen house are taken into account.
The stocking density in the hen house is max. 6 hens per square metre[15]. Integrated outdoor access areas are considered as part of the floor space if they are permanently accessible and utilisable; if this is not the case these areas count as 50% of the floor space which results in a maximum of 3 supplementary hens per square metre of ground floor.
An adequate number of rounded perching rods (with a diameter of at least 30 x 30 mm) has to be provided (18 cm per hen). These rods have to be at different levels. Nests are obligatory. They can be designed as individual nests (one nest for every eight birds) or as common nests (at least 120 square centimetres per bird).
If the animals are kept in aviaries, the stocking rate and size of the run depend on the system and therefore have to be discussed with the adviser. As a maximum limit, 12 animals per square metre of floor space must not be exceeded in any system.
Moulting that takes the animals basic needs into account is permitted in agreement with the adviser. Forced moulting is prohibited.

1.5.2 Feeder poultry

Extensive feeder races are to be preferred when establishing new stock. Otherwise the minimum ages for slaughtering as per appendix 8 have to be observed.

Fryers and turkeys:
The maximum stocking density must not exceed 21 kg live weight per square metre of floor space for fryers and turkeys.
The fowl have to be offered elevated perches.
The hours of artificial lighting may exceed the normal standard during the first three days of life.

Ducks and geese:
As soon as the animals are sufficiently feathered, access to outdoor areas has to be provided.
The maximum stocking rate must not exceed 21 kg live weight per square metre shed area.
Ponds have to be provided as part of the ducks' natural habitat[16]. Smaller areas of water have to be reinforced and must be cleaned regularly for reasons of hygiene.
Geese have to be given sufficient opportunity to graze, drink and clean themselves.

1.5.3 Pullets

The following additional regulations apply to pullet breeding:
In the first weeks of life, chicken rings are allowed.
From the twelfth week onwards, max. 10 birds may be kept in runs for each square metre free-range area, and young birds of max. 18 kg live weight per square metre (as a rule of thumb: sixth week means 18 birds per square metre inside the run). In runs on several levels, the number of birds is limited to 24 per square metre inside the hen house (twelfth week of life).

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[14] For hen houses built prior to 24th August, 1999, the following minimum requirements are valid for a transition period of up to 2010:
- at least one covered outdoors area of one third of the total floor space of the run **or**
- at least one grassland area of 2.5 square metres per bird **or**
- a covered outdoor area (of one quarter of the total floor space of the run) as well as a grassland area

[15] Areas designated as exercise areas must be at least 30 cm wide, at an inclination of max. 14% and with headroom of at least 45 cm.

[16] For duck houses built prior to 24th August, 1999, there is a transition period of up to 2010.

In hen houses with an integrated outdoor area, max. 13 pullets may be kept per square metre free range area (twelfth week of life), if there is continued access to the outdoor area during their active phases and if this area is fenced in, illuminated and shielded from the wind.
The chickens must have loose litter for scratching once they are transferred to the hen house. At least half the movement area in the run must be scratching area strewn with litter. The litter has to be kept loose, dry and clean.
In the first three days of life, the illuminated period can be prolonged. Special equipment may be used to perform a lighting sequence of varying incidence and duration.
Raised perches must be available from the first week of life onwards. As of the twelfth week of life, each bird must have 12 cm of perch available, of which one third are to be raised perches.
As of the first week of life, the birds must have the possibility to take dust baths.
At the latest as of the tenth week of life, the birds must have access to a roofed-over outdoor area with a solid floor during their active periods. The outdoor area can be integrated into the hen house system and included in calculations of stocking density (see respective calculations).
Where the free-range area does not have a solid floor, then there should be several areas available to be used in rotation or, if the areas are small, then measures must be taken (e. g. soil renewal) to keep contamination with parasites and nutrients to a minimum.

1.6 Horses

Horses have to be kept in groups. They must be given the opportunity to run or graze daily (stallions as far as it is possible without taking risks). The husbandry system should interfere as little as possible with the contact between the horses. Where the horses are kept in individual boxes, care should be taken that the animals at least have visual contact with each other. Foals and young horses have to grow up in groups. Shelter from bad weather must be available on the grazing land.

1.7 Game reserves

Game kept in reserves covers all types suitable for rearing under agricultural conditions (fallow deer, red deer). The game should be kept in herds of at least ten adults, the ideal ratio being ten to fifteen adult females to one stag.
Game in reserves should be kept at pasture all the year round. In order to satisfy their need for natural resting areas and for protection, shelter should be provided. If natural shelters (solitary trees, copses, hedges) are only sparsely available, then additional means of protection from wind and opportunities for concealment and shelter – scattered about the reserve – should be provided. Suitable ground conditions, such as rough concrete, gravel and grid stones should be placed at heavily frequented points (e.g. watering and feeding spots) to enable the animals to follow their instincts by scraping their hoofs.
Typical means of fraying their antlers must be made available to the male game in the reserve.
The stags' antlers may only be removed on the recommendation of a veterinary surgeon and then only in individual cases.
Where a mixture of game is kept, or in the case of separate reserves for wild boars and mouflons, special agreements based on the above criteria have to be concluded with Naturland.

1.8 Rabbits

Rabbits have to be kept in groups, the limit being max. 5 for breeding animals and max. 60 for fatteners.
The size of the run must be appropriate to satisfy the animals' natural need for movement. The space must be divided and structured with separate compartments for feeding, nesting and natural congregation.
Objects should always be provided for the rabbits to gnaw on.
Dams must be provided with sufficient space and nesting material to make their nests.
All the animals must have access to outdoors, where they should also be provided with sheltered areas to protect them from inclement weather.

2. Feeding

2.1 General requirements

Landless farming is prohibited. The basis of animal nutrition is the feed produced on the farm itself. At least 50% of the feed must be produced on the farm itself (or come from a co-operation with another organic farm approved by Naturland).[17] Exceptions can only be made for farms with livestock producing up to a maximum of 10 DU (dung units).
Buying in feed to enable an increase in the number of animals kept over and above the figure appropriate to local conditions is prohibited.
Purchased fodder must be certified by Naturland resp. meet certification standards approved as equivalent by Naturland. Only if availability is insufficient for ruminants (max. 10%), pigs and poultry (max. 15%) may feed from conventional production as per appendix 3 be used, in each case as the total average per year and referring to the dry matter given; here, the percentage of conventional feed – except for itinerant flocks - must not exceed 25% of the daily ration.

If animal produce is marketed as purely conventional, a maximum of up to 20% of feed from conventional production as per appendix II C of the EC regulation is allowed in addition to the feeds as per appendix 3; in the case of a feed crisis due to drought, fire or similar calamities only the feeds as per appendix II C – subject to Naturland approval - may be used as well.
If feed is purchased, a maximum of 30% of the dry matter of feed given may originate from areas which have been farmed in compliance with the standards for at least 12 months prior to their harvest. If this feed is produced on the farm itself, a maximum of 60% is allowed.
The application of mineral mixtures and vitamin preparations without any additives is exempt from these limitations. Synthetic vitamins, minerals and food supplements may be applied as per appendix 3.4 if they are not available in sufficient quantity and quality from natural sources.

Urea and other synthetic nitrogen compounds, excrement, offal and other by-products of animal origins, fodder produced from cadavers, synthetic amino acids (growth regulators and performance enhancing substances), appetite stimulants and artificial colouring are prohibited from the animal feed. The same applies to preservatives (with the exception of organic acids as per appendix 3.4 and processing supplements in the case of difficult climates as per appendix 3.5) and to fodder which has been produced by extraction with solvents (e. g. Hexan) or the addition of chemical substances not permitted under appendix 3.

2.2 Cattle

In cattle feeding, the appropriate structural balance in the feed ration must be observed (hay, straw, grain-whole-plant silage) all the year round. In summer, green feed must be provided. Exclusive year-round silage-feeding is not permitted.

The feeding of calves is carried out on the basis of natural milk for at least 3 months. Pure milk fattening without feeding roughage is not permitted.

If proof can be submitted that the respective feed from organic sources is only available to a limited extent, exceptions will be permitted. This must be done in agreement with the adviser and following appendix 3. 3.1 . Feed of up to an average of 10% of the dry matter of the ration may be bought from conventional sources for cattle feeding.

2.3 Sheep and goats

Whatever the season, care has to be taken when feeding sheep and goats to ensure the appropriate structural balance of the daily ration (hay, straw, grain-whole-plant silage).
The feeding of lambs and kids is carried out on the basis of natural milk for at least 45 days. Pure milk fattening without feeding roughage is not permitted.

[17] It is possible to substitute the same quantities at different levels of certification or quality.

The grazing of areas not belonging to the farm which correspond to the requirements of these standards (e.g. fallow areas) is permissible. In migratory herding, the grazing areas and migration routes, and in sheep paddocking, the extensive non-farm areas have to be registered and approved.
If proof can be provided that the respective feed of organic origin is not available to a sufficient extent, it will be permitted (in accordance with appendix 3. 3.1) to buy feed of up to an average of 10% of the dry matter of the daily ration from conventional sources for the feeding of sheep and goats.

2.4 Pigs

Their digestive physiology and ethology means that pigs also have to be fed roughage and succulent feed in a feeding programme that corresponds to the pigs' specific needs.
If there is proof that feed from organic sources for the augmentation of the protein quality of the feed is not available to a sufficient extent, feed of up to an average of 15% of the dry matter of the daily rations may be bought from conventional sources as per appendix 3. 3.2.
The feeding of the farrows is carried out on the basis of natural milk for at least 40 days.

2.5 Poultry

The birds must be provided with a sufficient number of places to drink and feed. On hot days, water should be offered in the runs as well. In addition, roughage has to be offered to all the birds as well.
If there is proof that feeding stuff from organic sources for the increase of the protein content of the feed is not available to a sufficient extent, feed of up to an average of 15% of the dry matter of the daily ration may be bought for poultry feeding from conventional sources as per appendix 3. 3.3.
For the feeding of laying hens, part of the grain should be offered as whole grains, if possible in the ground bedding. Grit or the like has to be used. A suitable mixture of grains should be made available to pullets in their ground bedding at the latest from the seventh week of life onwards.

2.6 Fodder for reserve game

If it can be proved that fodder from organic sources is not available in sufficient quantity, up to 10% of the fodder requirement as an average per daily ration from non-organic sources may be offered to the game, as per annex 3. 3.1. Wherever possible, chestnuts and acorns should be provided from woods certified by Naturland.

2.7 Rabbit fodder

If it can be proved that fodder from organic sources is not available in sufficient quantity, up to 10% of the fodder requirement as an average per daily ration from non-organic sources may be offered to the rabbits, as per annex 3. 3.1.

3. Purchased animals

Animals may only be purchased from organic farms that are certified by Naturland or meet certification standards approved as equivalent by Naturland. Animals for breeding can be purchased from conventional farms up to 10% of the existing stock[18]. This proportion can be exceeded in justifiable individual cases (e.g. enlargement of the farm) and in agreement with Naturland. Where the purchase of animals (farrows, chickens) is not possible in accordance with the above conditions (the farm manager is obliged to report and prove this), the following conditions apply when purchasing from conventional stocks and the marketing deadlines as per section A. I.9 have to be observed.

- Purchased farrows must not be more than six weeks old and they must be weaned. They may not be purchased for fattening.
- Chickens purchased for fattening or to be reared as pullets must not be more than two days old when introduced to the run[19].

4. Animal health

The health of the animals has to be ensured primarily by prophylactic measures (e.g. the appropriate housing conditions, treatment such as care of hooves, breeding, feeding). In the case of illness, natural cures are to be preferred. Treatments using chemical-synthetic preparations as well as hormones as a matter of routine and as a preventative measure are not allowed. Treatment for ecto- and endoparasites in areas where there is proof of frequent occurrence of the parasite are exempt hereof. In areas where diseases are prevalent or present a recognisable danger and cannot be brought under control by any other means, inoculation is permissible. Legal and official conditions are to be observed. Genetically modified vaccines are prohibited. It is permissible to supplement the iron supply of farrows with suitable preparations.
When animals are sick, their health has at all events top priority. Treatment must be fast and appropriate and may not be withheld for economic reasons (for example, if the treatment jeopardises their classification as being reared as organic).
Allopathic medicine may be used only on prescription by a veterinarian. A double waiting period - a minimum of 48 hours - must then be observed.
If animals are treated with chemical-synthetic allopathic animal medication or antibiotics more than twice in one year, their products may no longer be marketed with reference to Naturland, or the animals have to pass the conversion periods as per A. I.9 again respectively. (For animals which have a life span of less than one year, only one treatment is therefore permitted; marketing with reference to organic production is not prohibited in this case.) Vaccinations, parasite treatments as well as measures by order of state authorities are exempt.

Operations
Operations on animals may not be performed as a matter of course.
This applies particularly to the cutting and preventative abrasion of teeth as well as the docking of farrows' tails and ears, the docking of cows' tails and the clipping of other body parts (beaks, wings) of poultry. Where the conditions in the pen permit, dehorning of ruminants should be avoided. It is forbidden to dehorn the animals with a cautery.
Castration is permissible as a means of ensuring quality and maintaining traditional means of production (e. g. porkers, beef cattle etc.).
If operations are unavoidable for these reasons or for reasons of the safety or health of the animal and humans, or for animal protection or hygienic reasons (the docking of breeding lambs' tails, insertion of nose rings, markings), they may only be performed by qualified staff and when the animal has reached a suitable age, with the aim of keeping the animal's suffering to a minimum.

[18] This does not apply to farms with fewer than 10 animals.

[19] In units with up to 100 laying hens, exceptional permission may be granted to purchase pullets 18 weeks old at the most from conventional production. In that case a period of 6 weeks should be observed between the purchase of the pullets and sale of their eggs.

5. Shed hygiene

Cleaning of milking machines and other implements used in the sheds and runs should only be executed using environmentally friendly cleaning agents and disinfectants according to appendix 8 of these standards.

6. Breeding

Breeding systems have to be based on breeds which are able to mate and give birth in a natural way.
Artificial insemination is permitted.
Hormone oestrus synchronisation[20], embryo transfer, genetic engineering as well as the use of genetically modified species are not permitted.

7. Transport and slaughtering

Every animal and every group of animals must be identifiable at every stage of transport and slaughter.
Careful handling of the animal must be guaranteed. All pain or suffering must be avoided. The driving of the animals has to be done calmly and without electrical driving aids. When the animals are being loaded, special attention must be paid to suitable applications such as low ramps and non-slip floors. Existing groups have to be maintained.
During transport, sufficient room and fresh air must be guaranteed. Transport distances should be kept as short as possible. The maximum transport time should not exceed four hours and a maximum transport distance of 200 km. Transport times longer than eight hours are not permitted.
Drugs and tranquillisers must not be used. After the transport, the animal must have an opportunity to calm down.
The details regarding transport and slaughtering in the Naturland regulations on the processing of meat and meat products have to be observed.
The animals have to be stunned skilfully, with tested instruments, and individually.
As a basic principle, reserve game has to be killed by means of a shot gun, as required by animal protection law.

8. Co-operation

Co-operation between organically operated farms is permitted if one or more partners do not have a sufficient basis of feed for their stock or were landless or low on land as an individual farm. The farm co-operation is treated as one farm with regard to all standards regulations. Each co-operation has to be approved by Naturland as an individual case; the corresponding conditions are to be observed. The co-operating farms must be situated in the same region and they must agree to exchange fodder and manure. (A Naturland co-operation agreement covers further details.)
This limitation to one region applies in general too to the distance of each of the animals' sheds to their particular grazing areas.

[20] Hormones may only be prescribed by the vet for the purpose of the therapeutic treatment of breeding ailments of individual animals.

III. Market gardening

The predominant principles for plant cultivation as per part B. I. are to be observed. In addition, the following regulations apply to market gardening:

1. Application of manure, soil analyses, crop rotation

1.1 When growing vegetables in the open, nitrogen fertilization must not exceed 110 kg N/ha per year on average of the crop rotation in market gardening areas. Due to the higher degree of nutrient decomposition in the soil on account of a higher degree of cultivation intensity, more concentrated manure application (over 110 kg/ha per year) may be permissible in some cases after consultation with the adviser. In order to prevent over- or undersupply, the soil's or substratum's nutrient and humus content must be analysed at least every third year. The results of the analysis have to be evaluated in co-operation with the adviser.

1.2 Subject to the proviso of the adviser, a soil analysis for harmful substances (heavy metals, organic compounds) has to be performed and presented at the start of conversion and for any area rented or bought later on.

1.3 For greenhouse areas that are being converted and that had been cultivated conventionally for some time, a soil analysis for previous contamination with pesticides (e. g. chlorohydrocarbons) has to be submitted.

1.4 The quantity of purchased organic farm manure and organic commercial fertilizers has to be based on the results of the soil analysis and the data on the nutrient requirements of the crop rotation. Records have to be kept on the amount of fertilizers used (purchased and home grown fertilizers). All fertilizer sources have to be accounted for. The quantity and safety of purchased fertilizers have to be discussed with the adviser. Proof of up-dated analyses has to be given on request.

1.5 An analysis of the nitrogen level on the farm has to be performed annually. Where nitrogen is used as a fertilizer, the impact of harvest residue, green manuring and humus has to be taken into account. Nitrogen analyses of the produce grown may be imposed in particular cases by the advisers for certain crops.

1.6 Fields that are expected to lie fallow for more than 12 weeks during the vegetation period (April to November) have to be cultivated with green manure. Green manuring in winter and the cultivation of clover grass should be incorporated in the rotation of the vegetable crops where possible and reasonable.

2. Soils and substrata

2.1 Soils and substrata may be purchased or produced from the market garden's own mixtures. The use of additives is subject to Naturland's criteria for the application of compost (see appendix 10) and has to be discussed with and agreed upon by the adviser. See D. I. appendix 1 for the purchased fertilisers and soil improvement substances and appendix 2 for the pesticides permissible. The amount of peat applied has to be kept to a minimum. In seed and seedling substrata, peat is permitted up to a maximum of 80% of the total amount. The extensive application of peat to improve the quality of the soil is not permitted.

2.2 The use of any synthetic or surrogate substrata such as polystyrene peat, rock wool, water (hydroculture, nutritive film techniques) and so on is not permitted. The water sprouting of chicory roots that were nursed in the soil, however, is permissible.

2.3 Steaming of soils and substrata is permitted. Flat steaming (approx. 10 cm) for weed control is permitted in greenhouses. Deep steaming and steaming outdoors are not permitted; exceptions may be allowed only if crop rotation and soil improvement measures should prove impossible; these require the approval of Naturland.

3. Nursing of seedlings

All seedlings needed on the farm can be purchased, or grown in the farm's own nursery. The seedlings must be bought from farms that are certified by Naturland or meet certification standards approved as equivalent by Naturland.

4. Weed control

The method of flaming has to be energy-saving, using modern equipment (covering, nozzles). Row crop flaming combined with mechanical methods between the rows is to be preferred to flaming the whole area.

5. Heating green- and foil houses

Greenhouses may be heated for an appropriate limited period to lengthen cultivation in the autumn and to begin it earlier in the spring. The nursing of plants is not subject to any limitations in this respect. The aim should be the lowest energy consumption possible for each area cultivated and an eco-friendly method of energy production. Investment in constructional measures (heat insulation with suitable covering materials and energy reflectors, combined heat and power, heat pumps, heating with solar energy, methane gas, wood cuttings, natural gas) should be made to shorten the necessary heating period and reduce external energy requirements.

6. Food quality assurance

The nitrate content of the products has to be kept to the minimum possible by appropriation cultivation (location, variety, fertilizer). The quality achieved by the method of cultivation has to be maintained by the choice of careful harvesting, preparation and storage methods. In particular, any treatment with chemical -synthetic substances or radioactive irradiation is prohibited.

IV. Mushroom cultivation

The predominant principles of plant cultivation as per part B, I. are to be observed; in addition, the following regulations apply to mushroom cultivation:

1. Fertile mushroom material

The fertile mushroom material applied must – as far as available – be certified by Naturland or meet certification standards approved as equivalent by Naturland. If this is not available the farm manager has to give notice and proof of its non-availability.

2. Substratum

The basic materials and all other substratum components have to be purchased from farms that are certified by Naturland or meet certification standards approved as equivalent by Naturland. For mushroom cultivation on wood there has to be established proof of its origin and, if necessary, of the analyses that have been carried out. The wood may not be chemically treated. If no substratum certified by Naturland is available, other organic substrata may be used on a case-by-case basis and only upon Naturland's approval.

3. Cleaning and disinfection

The use of disinfectants and chloride for cultivation, covering soils, substrata, watering and soil receptacles and, during the cultivation period, on tools and in the cultivation rooms, is prohibited. Written proof has to be presented for the covering soil, the substrata and the transport receptacles. During cultivation, lime (not extinguished), thermal decontamination, alcohol, acetic acid and adhesive traps are permitted. In empty cultivation rooms, empty soil receptacles, on empty shelves and tools, cleaning substances and disinfectants as per appendix 8 may be used outside the cultivation period.

V. Cultivation of ornamental plants, herbaceous perennials, shrubs, Christmas trees [21]

The predominant principles for plant cultivation as per part B, I. are to be observed; in addition, the following regulations are applied to cultivation of ornamental plants, herbaceous perennials, shrubs and Christmas trees:

1. Manuring, soil analyses, crop rotation

1.1 For herbaceous perennials, shrubs and Christmas trees 90 kg N/ha per year, for ornamental plants grown in the open 110 kg N/ha per year must not be exceeded. Due to the higher degree of nutrient decomposition in the soil on account of greater cultivation intensity and because of the limited nutrient availability in cultivation receptacles in greenhouses, more intense manure application (over 110 kg/ha per year) may be permissible in some cases after consultation with the adviser. In order to prevent over- or undersupply, the soil's or substratum's nutrient and humus content must be analysed at least every third year. The results of the analysis have to be evaluated in co-operation with the adviser.

1.2 The quantity of bought-in farm manure and organic commercial fertilizers has to be based on the results of the soil analysis and the data about the nutrient requirements of the crop rotation. Records have to be kept on the amount of fertilizers used. All fertilizer sources have to be accounted for. The quantity and harmlessness of brought-in fertilizers have to be discussed with the adviser. Proof of up-dated analyses has to be given on request.

1.3. A balance sheet of the nitrogen level on the farm has to be presented annually. Where nitrogen is used as a fertilizer, the impact of harvest residues, green manuring and humus have to be taken into account.

1.4 Fields that will probably lie fallow for more than 12 weeks during the vegetation period (April to November) and, where possible, during the winter, have to be cultivated with green manure. Green manuring during the winter and the cultivation of clover grass should be incorporated in the crop rotation wherever possible and reasonable.

2. Soils and substrata

2.1 Soils and substrata may be purchased or be produced from the farm's own mixtures. The use of additives is subject to the Naturland criteria for the application of compost (ref. appendix 9) and has to be discussed with and agreed upon by the adviser. The list of purchased fertilisers and soil enhancing substances as per appendix 1 and permissible pesticides as per appendix 2 have to be observed. The amount of peat has to be reduced as far as possible. Peat is permitted up to a ratio of 50% of the total amount in receptacle substrata and up to 80% in seed and seedling substrata. Exceptions during the conversion period or because of particular cultivation needs (e. g. bog-soil plants) are only possible when discussed and agreed upon with the adviser. The extensive application of peat for soil amelioration purposes is not permitted.

2.2 The use of any synthetic or surrogate substrates such as polystyrene peat, Hygro peat, rock wool and so on is not permitted.

2.3 Steaming of soils and substrata is permitted. Flat steaming (approx. 10 cm) for weed control is permitted in greenhouses. Deep steaming and steaming outdoors is not permitted; exceptions may be allowed only if crop rotation and soil amelioration measures should prove impossible; these require approval by Naturland.

[21] Under these standards, Christmas trees are those planted on areas dedicated to this purpose and accorded legal approval. The standards also apply to decorative twigs as a by-product of such Christmas tree plantations.

3. Seedlings

Seedlings needed on the farm have to be grown there or purchased from farms that are certified by Naturland or meet certification standards approved as equivalent by Naturland. If certain varieties are not available (the farm manager has to give notice and proof of non-availability) vegetatively or generatively propagated plants from conventional sources may be used. Plants ready for sale from vegetatively propagated plants may be declared as Naturland products in conversion, whilst for generatively propagated plants this is only possible one year after purchase. Two years after purchase, plants from both sources may be declared as Naturland products. The goal of organically grown seedlings can only be achieved step by step; the respective stage of development has to be taken into account when purchasing plant material.

4. Purchase of raw and finished goods

If conventional raw or finished goods are purchased, these must be distinguishable at any time on the farm (further cultivation, wrapping, sale etc.). This has to be achieved by suitable means (e. g. labelling, separate tables, houses or sheds). For the consumer the different ways of production have to be made obvious by clearly labelling the products as conventional.

5. Plant pots

Decomposable matter is to be preferred, e. g. paper, flax, jute and hemp or even clay, as long as these allow reasonable organic cultivation. Plastic pots and receptacles etc. must be of sturdy materials, making it possible to use them several times, and they must be recyclable. PVC is not permitted. Pots that are on the farm already and do not comply with these conditions may be used up during the conversion period.

6. Sealing of the soil

The standing areas for pots and containers should not be sealed, if possible; the creation of sealed standing areas is permitted only if precipitation and irrigation water are collected and recycled.

7. Greenhouses

7.1 Heating, energy consumption

Greenhouses may be heated for an appropriate limited period to lengthen cultivation in the autumn and to begin it earlier in the spring. The nursing of plants is not subject to any limitations in this respect. The aim should be the lowest energy consumption possible for each area cultivated and an eco-friendly method of energy production. Investment in constructional measures (heat insulation with suitable covering materials and energy reflectors, combined heat and power, heat pumps, heating with solar energy, methane gas, wood cuttings, natural gas) should be made to shorten the necessary heating period and reduce outside energy requirements.

7.2 Assimilation lighting

Assimilation lighting is only permitted in seedling nurseries.

VI. Fruit cultivation

The predominant principles of plant cultivation as per part B, I. are to be observed; in addition, the following regulations are applied to fruit cultivation:

1. Humus management and fertilization

1.1 In intensive permanent crops, such as fruit cultivation, a balanced humus supply is of essential relevance.

1.2 An important measure for maintaining and increasing soil fertility has permanent plant coverage. It provides various habitats and in particular enables the colonisation of beneficial insects. For a better soil structure and development undergrowth such as legumes, herbs and grass are suitable. For soil maintenance measures, soil loosening, reseeding or because of drought in summer a break in plant coverage is possible. Maintenance measures are to be carried out mechanically or thermally. The coverage plants should be left standing until they come into flower. If needed, the strips of trees or the area underneath the trees may be kept clear by using mechanical and thermal methods. The soil must not be bare or without any plant coverage over the whole area and throughout the whole year.

1.3 For further amelioration of the humus supply organic manure may be applied. The total amount of nitrogen fertilizers applied must not exceed 90 kg N/ha per fruit cultivation area and year (ref. appendix 1).

2. Pest, disease and weed control

2.1 In organic agriculture, one of the most important goals is the achievement of healthy plants by encouraging an ecological balance between pests and beneficial species.

2.2 Essential measures to prevent diseases are suitable stocking densities as well as the selection of healthy and hardy plants, varieties and strains.

2.3 The hardiness of shrubs can also be strengthened and the risk of infection can be lowered by using appropriate soil management and cultivation measures (shape pruning, rootstock building, cut part, foliage work, line spacing, maintenance underneath of trees, etc.).

2.4 Conditions for a healthy microclimate in the fruit plantations are to be established.

2.5 Produce from areas that may have been contaminated general pest control measures has to be commercialised conventionally. The farm has a special obligation regarding notification and documentation of these instances.

2.6 The use of synthetic chemical substances is prohibited. A list of the pesticides permitted is given in appendix 2.

3. Supporting material

Tropical or subtropical timber is not permitted. Exceptions hereto are the tropical grass species bamboo and Tonkin cane.

VII. Viniculture and wine production

The predominant principles of plant cultivation as per part B, I. are to be observed; in addition, the following regulations are applied to viniculture:

1. Treatment of the soil

The most important means of maintaining and increasing the fertility of the soil is to ensure good plant coverage. The plants are the habitat of a wide variety of flora and fauna. Wild plants, supplemented by other suitable plants sown in to complement them, break down and stabilise the soil.
As a matter of principle, vineyards must have good plant coverage. This coverage may only be interrupted for max. 3 months over the whole area when attending to the soil, loosening it, sowing seeds, during dry periods in summer and in new fields. If every second row has plant coverage, the alternative rows may be kept free for max. 6 months (from 1st January to 1st September) upon consultation with a Naturland adviser.
It is recommended to leave one area fallow. Fallow areas are to have good plant coverage.
Where plant coverage is sown, this must be of mixed composition, preference being given to local strains and leguminous plants.
For preference, measures applied to this plant coverage should be mowing or rolling, and mulching. Treatment should be on an alternating basis and flowering plants are to be encouraged.

2. Humus management and fertilisation

The decomposition processes of active soil are the prerequisite for the balanced nutrition of crops. In order to ensure long-lasting soil activity and thus crop yields, special attention has to be paid to the basis of soil fertility.

- The humus balance has to be at least at an equilibrium throughout a varied crop rotation cycle. For permanent crops, this has to be guaranteed by adequate measures such as undergrowth, catch crops or permanent plant coverage.
- Biodegradable material from microbial, vegetable or animal sources is the basis of fertilisation.
- Given the importance of a balanced lime level for topsoil stability, as well as for the structure and thus the fertility of the soil, and because of acid absorption from precipitation, special attention has to be paid to an adequate lime supply appropriate to local conditions.

The use of supplementary fertilizers (P, K, Mg) as per appendix 1. 1.5 is to be discussed with a Naturland adviser and depends on corresponding soil analyses.
The vines‘ nitrogen requirements are to be supplied by sowing leguminous plants. Where organic fertilizers are added, a maximum of 150 kg N/ha may be used over three years, while a max. of 70 kg may be available to the plants in the year of applying the fertilizer. Synthetic chemical nitrogenous fertilizers and other easily soluble fertilizers, faecal sludge and compost from sewage sludge are forbidden.
For permitted fertilizers, see appendix 1.

3. Treatment of the soil

The soil should be treated with the aim of maintaining its positive structure and encouraging biological activity, in order to offer the plants the best conditions for growth.
When loosening the soil, the natural layers should be preserved as far as possible. This is especially important when preparing the soil for new vines to be planted. When vineyards are cleared, coverage plants should be sown to stabilise the structure of the soil.

4. Protection and treatment of the plants

The organic treatment of plants begins with the methods of cultivation designed to strengthen the vines' resistance and lower the risk of infection. These include the treatment of the soil, fertilization and such measures as the choice of variety, spacing, training and shaping of the vines, pruning and trimming.
In order to encourage the vines' self-regulating mechanisms and resistance against pests such as fungi and insects, inhibitors, tonics and treatments as listed under appendix 2 may be applied.
Where pesticides are sprayed from the air on a general scale and are outside the vintner's control (e. g. by helicopter), or in community projects, all other methods of cultivation must be according to these stan-

dards. Produce from affected areas (where synthetic chemical means are used) may not be marketed as organic or with reference to Naturland or under the Naturland® logo.
When community land has been reallocated, the soil must be covered with a rich variety of fallow-land plants for at least one year.
The containment of undergrowth can be done mechanically or thermally.
Synthetic chemical insecticides, acaricides, nematocides, fungicides and herbicides are prohibited.
For permitted pesticides, see appendix 2.

5. Processing

If produce is to be marketed under the Naturland® logo, only grapes from organic agriculture, which have been grown according to these standards, may be processed to make grape juice, wine, sparkling wine or spirits.
These standards assume that national laws and regulations governing wine production have been complied with.
All procedures and measures when processing the grapes and in producing juice, wine and sparkling wine have to be directed at the following aims:

- manufacture of produce of superior quality
- avoidance of procedures making intensive use of raw materials and energy
- sulphurous acid kept to a minimum
- avoidance of all substances which are harmful to the environment and dangerous to the health in their production, use and disposal
- processing and treatment of all organic residues resulting from production in such a way that they do not damage the environment. Marc, yeast and clarification dregs are to be recycled in the course of production as organic fertilizer.

5.1 Permissible processing procedures and oenological means of treatment

Only the following processing procedures and oenological means of treatment may be used.

5.1.1 Processing procedures

- short term heating-procedure
- hot bottling of wine
- centrifuging and filtering
- thermal treatment
- warming the mash and must to 30° C or 60° C
- preparation and storage of unfermented reserves
- cold treatment
- ventilation

5.1.2 Oenological means of treatment

- carbonic acid E 290 and nitrogen E 941
- sulphurous acid and potassium bisulphate
- yeast, dried yeast
- undiluted, fresh yeast from organic production

To encourage yeast formation:
- thiamine
- mineral yeast nutriments, yeast membrane preparations

Enrichment:
- sucrose (crystallised beet sugar) from organic production
- grape must concentrate from organic production

Deacidification:
- potassium bitartrate
- lactic acid bacteria
- potassium bicarbonate, potassium carbonate

Clarification:
- edible gelatine
- silicon dioxide in gel form or in a colloid solution (silicic brine, diatomaceous earth)
- sturgeon glue
- casein and potassium caseinates
- tannin
- egg white and albumen
- bentonites with a low iron content

To enhance the taste:
- charcoal
- copper sulphate[22]
- citric acid (to stabilise iron)
- ascorbic acid
- pectolytic enzymes, free of pepsins (only for grape juice and the preparation of unfermented reserve)
- betaglucanase
- Perlite

Combined preparations are only permitted if the individual components are known and approved.

5.2 Cleansing agents and disinfectants

All cleansing agents and disinfectants containing chlorine are prohibited.
Special attention is to be paid to ecofriendliness in the choice of cleansing agents and disinfectants.
The following agents are permitted for use when cleaning with water, steam or by mechanical means:

- peracetic acid, citric acid, tartaric acid
- H_2O_2
- ozone
- caustic soda
- soft soap
- sulphurous acid
- alcohol
- potassium lye, surfactants

5.3 Packaging

- The enterprise must take back empties.
- Caps: It is recommended that no caps be used. Caps containing lead are prohibited.
- Stoppers: corks treated with chlorine are prohibited.
- Transport packaging: the use of polystyrene is prohibited. Plastic packaging is only permitted as part of a return system. The plastic used in packaging should be PE.
- Glue: Glues containing PVC are prohibited.
- Labels: Paper and printing containing heavy metal are prohibited.

[22] The use of copper sulphate in IFOAM compliant products is prohibited.

VIII. Permanent tropical plantations (coffee, tea, cocoa, bananas, citrus fruits, avocados, mangoes etc.)

The overriding principles governing plant cultivation as under Part B. I. are to be observed. The following supplementary regulations apply to permanent plantations of tropical crops:

1. Humus balance and fertilisation

1.1 A balanced humus supply is of fundamental importance when practising intensive crop cultivation. Agrarian forestry systems in particular are endowed with a great capacity to supply their own humus and fertilisers.

1.2 A fundamental means of maintaining and increasing soil fertility is to plant trees and grass. They provide diverse habitats and encourage the establishment of beneficial insects. An ideal means of breaking down the soil coverage is to sow such undergrowth as leguminous plants and herbs. No area should be entirely free of vegetation or other coverage the whole year round.

1.3 To further improve the supply of humus, organic fertilisers may be applied. Where permanent crops are intensively cultivated and thus, where necessary, entailing a greater turnover of substances in the soil, a higher fertilisation rate (over 110 kg N/ha per year) is possible, upon consultation. To ensure that the soil suffers neither from under- or over-supply, the soil, leaves and substrata should be analysed at least every three years to determine their nutritional and humus content, and be evaluated with the advisers. The application of complementary fertilisers (P, K, Mg) as listed under appendix 1. 1.5. depends on corresponding soil analyses.

2. Keeping pests, diseases and weeds (extraneous vegetation) in check

2.1 The primary aim of organic agriculture is to achieve healthy vegetation by striving for ecological equilibrium between pests and beneficial insects.

2.2 Important means of preventing disease are suitable plant density and the choice of healthy and resistant plants. The farming intensity has to be matched to local ecological conditions. Excessive plant density, which prevents shade trees from growing (especially in the cultivation of coffee) and favours the spread of diseases, is not permitted.

2.3 The ability of the shrubs to resist disease is increased and the incidence of infection further reduced by suitable attention to the soil and specific cultivation measures (pruning, planting shade trees to increase the height of the vegetation).

2.4 Suitable conditions to achieve a healthy micro-climate for permanent tropical crops are to be established.

2.5 The use of synthetic chemical substances is prohibited. For permissible pesticides, see appendix 2.

2.6 Products from areas which may have been contaminated by pesticides not conforming to these standards and used in the treatment of other areas must be sold as conventional produce. Such occurrences must be specially recorded and reported.

3. Sustainability of the cultivation system

The sustainability of the cultivation system of permanent tropical plantations is ensured by the following measures:

3.1 The requirements made of the organic cultivation of permanent tropic plantation are fulfilled by creating agro-forestry systems of wide agricultural bio-diversity and appropriate to the crops' habitat.

3.2 The important contribution made by trees in tropical eco-systems to the fertility of the soil, the supply of nutriments, the water balance and bio-diversity are to be enhanced by the integration of shade trees in the cultivation system. Suitable species are those adapted to the habitat and, for preference, indigenous strains. The aim is to introduce a diversity of shade tree species and to plant legumes too.

3.3 Measures are to be taken to provide protection from erosion (e. g. by planting vegetation round the borders, or dense undergrowth). Organic substances, especially the leaves which fall from the shade trees, are particularly important. Management of this secondary vegetation must ensure good soil coverage and the preservation of the mulch layer.

4. Special processing methods

4.1 Suitable measures are to be adopted to clean the effluent produced when wet-processing coffee beans. It is forbidden to release effluent into open waters unless purified.

4.2. Organic residue (coffee pulp, cocoa-bean husks etc.) should, for preference, be composted. At all events it must be reintroduced into the organic system or used in some form in agriculture (for example, as animal fodder).

IX. Wild grown products

1. Definition

"Wild grown products" are defined as products that have grown without or with low influence of the operator gathering the products. The harvest has to be planned and carried out applying a sustainable system that is ecofriendly and socially acceptable.

This means in detail:
a) The plants must not be cultivated, i.e. any measures to enhance or protect growth shall not be taken, or kept on a very low level (reproduction, soil management, cutting, extensive fertilising, etc.).
b) In their location the plants have to be found naturally.

"Wild grown products" following this definition can be clearly distinguished from:
a) products of organic agriculture
=> active organic cultivation
b) products of traditional agriculture
=> extensive conventional cultivation
c) products of former farmland which is out of cultivation
=> cultivated plants without the conditions of a natural habitat.

The only human interference consists of the harvest (gathering) of these wild grown products or in measures taken to protect their natural growth potential (protection from erosion etc.).

2. Requirements

2.1 The possibility of contamination of the products in the collecting areas by pollution from other areas has to be excluded.

2.2 Clear demarcation of the collecting area of the wild grown products to be certified has to be possible. Therefore the areas have to be clearly identified by way of land register maps (drawing of plans if necessary).

2.3 The collecting rights have to be identified clearly within the project. One or more persons have to be named as responsible for the following range of duties:

- survey of all project activities (collecting area, collecting period, amount harvested, number of pickers etc.)
- administration
- knowledge of the principles of organic agriculture and basic ecological principles

2.4 The production method (collecting and any treatment measures) must show proof of their ecofriendly nature, whereby damage to the ecological system from long-term exploitation has to be excluded.

2.5 Before the start of each collecting season, the maximum amount to be harvested has to be defined annually to prevent overexploitation.

2.6 Regular inspection is obligatory. At least one inspection per year has to be carried out. This independent inspection comprises particularly the inspection of the conditions listed under items 2.3 and 2.4.

2.7 Regular residue analysis is obligatory. A list of substances to be looked for as well as their relative limits will be given for each product.

3. Labelling

The labelling of a product enables the buyer to identify the person or company legally responsible for the product.
For the consumer, wild grown products have to be clearly and visibly distinguishable from products of organic agriculture.

To ensure this, the origin of every "wild grown product" has to be made clear on its label on the list of ingredients or in the information printed on the product wrapping material (not only in an additional booklet). There is no particular mandatory form for this note.
The note is not obligatory if the share of wild grown products in a mixed product is less than 25 %.

X. Beekeeping

The standards for organic beekeeping according to Naturland's standards can be ordered from Naturland e.V., Kleinhaderner Weg 1, 82166 Gräfelfing; Germany, or under www.naturland.de and naturland@naturland.de.

XI. Aquaculture

The standards for organic aquaculture including chapters on:

A. Pond culture of carp (*Cyprinus carpio*) and accompanying species
B. Culture of trout, salmon and other salmonids in ponds and net compounds
C. Rope culture of mussels (blue mussel *Mytilus edulis* and others)
D. Culture of shrimps in ponds (Western White shrimp *Litopenaeus vannamei* and others)
E. Culture of tropical freshwater fish (shark cat *Pangasius sp.,* milkfish *Chanos chanos*, Tilapia *Oreochromis sp*., Arapaima *Arapaima gigas* and others) in ponds and net compounds

can be purchased from Naturland e.V., Kleinhaderner Weg 1, 82166 Gräfelfing, Germany, or under www.naturland.de and naturland@naturland.de.

XII. Organic Forest Management

The standards for organic forest management and the processing standards for timber from organic forest management can be ordered from Naturland e.V., Kleinhaderner Weg 1, 82166 Gräfelfing, Germany, or under www.naturland.de and naturland@naturland.de.

Appendices production

Appendix 1: Permissible purchased fertilizers and soil improvement agents

The purchasing of fertilizers from organic farms is permitted. Solid manure from conventional farms, organic and mineral fertilizer according to 1.3 and 1.5, as well as green compost, have to be agreed upon by the adviser and the inspection body responsible before use. Their use is subject to the legal regulations currently in force.

1.1 Solid manure from conventional farms

- shed manure (except poultry droppings) on condition that it has been properly prepared (regulated setting, addition of stone meal) and at least three months rot
- It is strongly recommended that the manure supplier be provided with straw from organic farms.

1.2 Green compost

- Green compost may only be used after the explicit approval by Naturland e.V. has been received, if it is proven free from harmful residues. Soil analyses and compost checks are obligatory. Refer to the list of criteria, appendix 9, and consult the adviser as to the limits and compost additives allowed.

1.3 Other types of purchased manure (subject to approval by Naturland and the relevant inspection body)

- by-products of processing (horn-, hair and feather waste, castor cake and the like; meat, blood and bone meal are prohibited)
- peat without any synthetic additives, only for nursery plants
- sawdust, bark and wood waste (from timber that is not contaminated with fungicides or insecticides)
- sea algae and their extracts

1.4 Supplementary mineral fertilizers

- stone meal (composition must be known)
- clay soils (e. g. bentonite)
- lime fertilizers with a slow effect (dolomite, carbonic acid lime, shellfish lime, sea algae lime)
- raw phosphates (with a low content of heavy metals)

1.5 Only if required according to the results of soil analyses and after approval of the accredited inspection body responsible

- basic slag
- Thomas lime, converter lime, lime from iron and steelworks
- trace elements
- potassium magnesia (patent potassium), potassium sulphate, kainite
- calcium sulphate
- sulphur of natural origin
- magnesium sulphate ($MgSO_4$)
- calcium chloride ($CaCl_2$) to prevent apples from spotting

When choosing the fertilisers, their heavy metal content has to be considered and possible emissions have to be reduced to a minimum; a percentage of 90 mg Cd /per kg P_2O_5 must not be exceeded in phosphate fertilizers.

1.6. Miscellaneous

- extracts and preparations from plants
- compost activators (microbial or herbal)

Appendix 2: Permissible plant protection products

2.1 Biological and biotechnological measures

- the encouragement and application of the natural enemies of pathogenic agents and crop pests (e. g. predatory mites, hatching wasps)
- insect traps (e. g. sexual pheromones, coloured attractants)
- mechanical repellents (e.g. traps)
- non-synthetic-chemical deterrents and expellants (e. g. scented agents)

2.2 Plant-fortifying and nurturing agents

Preparations which strengthen the resistance of the plants and inhibit certain pests and diseases:

- plant preparations (e.g. horsetail tea)
- propolis
- algae limes and extracts
- bentonites
- stone-meal
- milk and dairy products
- edible natron
- compost extracts
- wood ash
- beeswax
- hydrolysed protein

2.3 Agents against fungus diseases in fruit growing and in special crops

- wettable sulphur
- copper salts* (max. 3 kg/ha per year, also for potatoes; for hops max. 4 kg/ha per year)
- sodium silicate
- lecithin
- sulphuric lime*
- potassium permanganate

2.4 Agents against animal pests

- virus, fungus and bacteria preparations (e.g. bacillus thuringiensis)
- preparations of ryania speciosa*, derris elliptica*, azadirachta indica (neem)*
- pyrethrum extract* (synthetic pyrethroides and synergists are prohibited)
- quassia amare*
- oil emulsions (without synthetic chemical insecticides) on the basis of paraffin oils* and/or vegetable oils
- soft soap
- stone meal
- gelatine
- ferric III phosphate

***after approval by the accredited inspection body responsible**

Appendix 3: Permissible feed

If feed has to be bought, it has to be certified by Naturland or meet certification standards approved as equivalent by Naturland. If this is not available feed may be purchased from other farms according to the following priority list[23]:

- inspected according to the EU regulations on organic agriculture
- from extensive cultivation as part of a monitored scheme
- conventional agriculture.

3.1 Cattle, sheep, goats, horses, game kept in reserves, rabbits

Up to 10% of the ration of the following feed can be used by ruminants if there is proof that feed of organic origin is not available to the extent necessary (a maximum of 10% of the dry matter, applied to an average ration; the percentage being calculated without the mineral substances):

- flax and colza seeds, -cakes and -expellers
- brewer's yeast
- brewer's grains, pomace (as far as permissible under EEC regulation 2092/91)
- dairy products

Basic feed from areas in conversion that have been incorporated in the farm for the first time and have been cultivated in compliance with the standards for less than 12 months as well can be used without further approval. However, the 10% limit must be taken into account.

3.2 Pigs

Permitted feed for pigs up to 15% of the ration, if there is proof that feed for the improvement of the protein quality is not available from organic sources in the necessary quantities:

- sunflower-, flax- and colza seeds, -cakes and -expellers
- brewer's grains, pomace (as far as permitted under EEC regulation 2092/91)
- potato protein
- brewer's yeast
- dairy products
- maize gluten feed, wheat gluten feed

3.3 Poultry

Permitted feed for poultry up to 15% of the ration, if there is proof that feed for the improvement of the protein quality is not available from organic sources in the necessary quantities:

- sunflower-, flax- and colza seeds, -cakes and -expellers
- brewer's grains, pomace (as far as permitted under EEC regulation 2092/91)
- potato protein
- brewer's yeast
- dairy products
- maize gluten feed
- eggs and egg produce

For the feeding of young stock only:

- Fish, miscellaneous marine creatures and their products and side products (marine creatures resulting from by-catches or remnants of seafood processing only)

3.4 All animal species

- molasses
- seaweed meal
- powders and extracts of plants (only for young stock)
- spices and flavouring

[23] In this case the requirements of the EEC regulation on the purchase of products from conventional sources are to be observed.

- supplements and additives in animal feeding according to appendix II C and D of the EEC regulation 2092/91:
  - trace elements
  - carrier material of vegetable origin
  - binders, anti-caking agents and coagulants
  - vitamins
  - enzymes[24]
  - micro-organisms
  - organic acids for conservation

3.5 Processing aids for silage

- lactic-, acetic-, formic- and propionic acid bacteria*
- feed-sugar
- molasses
- whey
- sea salt, coarse rock salt
- enzymes, yeasts

** If weather conditions do not allow for adequate fermentation, Naturland may authorise the use of lactic-, formic-, propionic- and acetic acids in the production of silage.*

[24] after permission has been obtained from Naturland

Appendix 4: Permissible animal stocking density (corresponding to 1.4 dung units)

Animal stocking density is related to dung units. A dung unit (DU) is defined as the animal stocking density with an annual output of faecal matter and urine containing not more than 80 kg nitrogen or more than 70 kg of phosphate (P_2O_5).

Species or strain of animal	**maximum number of animals per hectare**
equines over 6 months (equidae)	2
calves, veal calves	5
other cattle under one year old	5
male cattle 1 - 2 years old	3.3
female cattle 1 - 2 years old	3.3
male cattle over 2 years old	2
breeding heifers	2.5
fattening heifers	2.5
dairy cattle	2
cows not suitable for breeding	2
other cows (e. g. mothers or foster mothers)	2.5
ewes	13.3
mother goats	13.3
farrows	74
breeding sows (without farrows)	6.5
fattening pigs	10
other pigs	10
fattening hens	280
laying hens	140
pullets	280
fattening ducks	210
fattening turkeys	140
fattening geese	280
fallow deer kept in reserves, including offspring and stags	10
red deer kept in reserves, including offspring and stags	5
breeding rabbits including offspring and bucks	105

Adjustments should be made for animals which produce different amounts of dung depending on their strain.

If the animals are not kept year-round or if they are to be allocated differently because of their age or the purpose to which they are put, then the above figures will be calculated on the average of the animals kept annually.

Appendix 5: Minimum surface areas indoors and outdoors and other characteristics of housing for various species and types of production

1. Cattle, sheep and pigs			
	Indoor area (net area available to each animal)		Outdoor area (exercise area, excluding pasturage)
	Live weight in kg	Minimum size in square metres per animal	Square metres per animal
breeding and fattening cattle and equines	up to 100 up to 200 up to 350 over 350	1.5 2.5 4.0 5.0, minimum of 1 square metre per 100 kg	1.1 1.9 3.0 3.7, minimum of 0.75 square metres per 100 kg
dairy cattle		6	4.5
bulls for breeding		10	30
sheep and goats		1.5 per sheep/goat 0.35 per lamb/kid	2.5 0.5 per lamb/kid
suckling sows with farrows up to 40 days old		7.5 per sow	2.5
fattening pigs	up to 50 up to 85 up to 110	0.8 1.1 1.3	0.6 0.8 1.0
farrows	over 40 days old and up to 30 kg	0.6	0.4
brood pigs		2.5 per female brood pig 6.0 per male brood pig	1.9 8.0
breeding rabbits (including offspring and bucks)		1.6	
fattening rabbits	up to 60 days over 60 days	0.15 0.25	

2. Poultry				
	Indoor area (net area available per bird)			Outdoor area (square metres of area available in rotation per bird)
	Number of birds per square metre	Centimetre (cm) of perch per bird	Nest	Square metres per bird
laying hens	6	18	8 laying hens per nest or, in the case of a common nest, 120 cm^2 /bird	4, if the limit of 170 kg N per hectare per year is not exceeded
fattening poultry (in permanent housing)	10, with a maximum of 21 kg live weight per square metre	20 (for guinea fowl only)		4 fryers and guinea fowl 4.5 ducks 10 turkeys 15 geese In all the species mentioned above, the limit of 170 kg N per hectare per year must not be exceeded.
fattening poultry (in mobile housing)	16 (*) in mobile poultry houses with a maximum of 30 kg live weight per square metre			2.5, if the limit of 170 kg N per hectare per year is not exceeded.
(*) only in the case of mobile houses not exceeding 150 square metres floor space				

Appendix 6: Required conditions of poultry housing

- They must have entry/exit pop-holes of a size adequate for the birds, and these pop-holes must have a combined length of at least 4 metres per 100 square metres area of the house available to the birds.
- Each poultry house must not contain more than:

chickens	4800
laying hens	3000
guinea fowl	5200
Muscovy or Peking ducks	female: 4000
	male: 3200
capons, geese, turkeys	2500
Total usable area of poultry houses for meat production on any single production unit must not exceed	1600 square metres

Appendix 7: Minimum ages for slaughtering of poultry (fast-growing races)

Poultry species	Minimum age in days
chickens	81
capons	150
Peking ducks	49
female Muscovy ducks	70
male Muscovy ducks	84
mallard ducks	92
guinea fowl	94
turkeys and broiling geese	140

Appendix 8: Cleaning and disinfection substances

- alcohol
- caustic potash
- caustic soda
- quicklime
- acetic acid
- potassium and sodium soap
- lime
- milk of lime
- lactic acid
- sodium hypochloride
- sodium carbonate
- oxalic acid
- peracetic acid
- natural essences of plants
- phosphoric acid (dairy equipment)
- nitric acid (dairy equipment)
- water and steam
- hydrogen peroxide
- citric acid
- cleaning and disinfection substances for teats and milking facilities

Appendix 9: Criteria for the use of compost on Naturland® farms and permissible substances for use in a methane gas plant

When purchasing compost the following criteria have to be observed:
Green compost may only be applied with the express approval of Naturland e.V., if it is certain that it does not contain any problematical residues. To ascertain this, it is imperative to conduct soil analyses and examine the compost, and the permitted components of this green compost of limited.
Garbage compost and compost obtained from recycling operations are not permitted.

1. Soil analysis

A soil analysis of the present contamination with the heavy metals lead, cadmium, chrome, copper, nickel, mercury and zinc is required.

As a standard the following soil values are valid (soil value 1) according to Eickmann and Kloke) in mg/kg dry matter: lead 100; cadmium 1; chrome 50; copper 50; nickel 40; mercury 0.5; zinc 150.

For soils with pH values under 6, clay content under 8 % and a high geogenic source of contamination, special care is required.

The soil analysis has to be carried out at least every 10 years.

2. Compost analysis

A compost analysis for contamination with the heavy metals lead, cadmium, chrome, copper, nickel, mercury and zinc is required. The values of compost class 1 according to Riess (1992) are valid in mg/kg dry matter:

Lead 75; cadmium 0.75; chrome 75; copper 50; nickel 30; mercury 0.5; zinc 200.
The analysis has to be carried out at least once a year.
If applicable, an analysis for harmful organic substances must be carried out. For dioxin and furan there is a limit of 17ng ITE/kg dry matter, for PCB a limit of 0,033mg/kg dry matter per single congene or 0.2 mg/kg dry matter PCB (6).

3. Compost starting materials or additives

a) Permitted without limitation:
- green forage, cut forage, foliage (not from roadsides and other contaminated areas)
- cut reed grass, underwater cut forage (not from contaminated waters)
- materials of untreated timber: bark, sawdust, shavings, wood
- mushroom substrata
- food waste from organic production and processing
- lees, yeast, siliceous filters from organic processing

b) Permitted within limits:
In individual cases only, residue analyses must be presented if required, maximum proportion 20% - 50%; approval by the advisor
- vegetable/fruit waste or leavings/side products from conventional plant production
- materials of treated timber: bark, sawdust, shavings, wood
- processing by-products (horn meal; wool, hair and feather waste; castor cake, vegetable fats and similar substances)

c) Prohibited:
- household waste (green bin)
- paper
- tobacco
- waste from leather processing
- flotsam and jetsam

4. Amount applied

The general limit of 0.5 dung units per hectare and year on average per crop rotation (with the exception of horticulture, fruit growing and viniculture) applies.