



# Naturland Standards on Production

Version 05/2014

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## Preface

### Introduction

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 and appreciation 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 viticulture, bee-keeping, 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

For producers, processors and consumers, certification by Naturland stands for a reliable quality management system, for the dependability of the organically grown produce, from its cultivation to the finished product. Naturland has been accredited to the European norm DIN EN 45011/ISO 65 since 1998. This accreditation confirms that certification is performed to defined norms.

## 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, synthetic chemical pesticides 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<sup>1</sup>.

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 regulations (EC) No 834/2007 and No 889/2008 (EU regulation on organic production of agricultural products respectively the detailed rules for its implementation) and the subsequent amendments have to be observed.

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<sup>1</sup> 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.8 of these standards has to be complied with. Gradual conversion may take 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. 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.8 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. This applies particularly to areas newly included in the area farmed (e. g. sewage sludge, road traffic etc.).

The marketing deadlines according to section A. I.8 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 subcontracting 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.

It is standard practice for complaints in connection with matters within Naturland's sphere of responsibility to be addressed to Naturland's head offices in Gräfelfing, Germany.

## 8. Labelling and marketing

The labelling of products enables the trader legally responsible for the product to be identified. The provisions of regulations (EC) No 834/2007 and No 889/2008, as far as they apply to the EU Community logo and the declaration of origin (place where the agricultural raw materials were produced) are to be observed.

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 use of pasture as a feed crop.

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.

Only vegetable produce may be labelled as a **conversion product**. In such cases the requirement is that the product consists of one sole ingredient of agricultural origin (sometimes referred to as a "mono-product") 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. In addition to the use of the Naturland logo the product must be identified as a "product of conversion to organic agriculture".

### Animal products

eggs:		6 weeks*
milk:		6 months
meat:		
	poultry:	10 weeks; small poultry 6 weeks
	pigs:	6 months
	small ruminants:	6 months
	cattle:	12 months, at least three quarters of their lifetime
honey:		see chapter B. XI. 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.

\* It is only possible to sell eggs under the Naturland logo or with reference to Naturland or to Naturland's standards if the hens were kept and fed according to Naturland's standards from the first week of their lives onwards.

If Naturland eggs are to be taken to a packing station which also packs conventional eggs, then the Naturland eggs have to be printed beforehand, on the 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 B. XI.).

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

### 1. Sustainable management

Organic agriculture is particularly committed to sustainable management. This includes the respectful treatment of nature and the environment, the sustainable use of natural resources, the acceptance of social responsibility and the maintenance of economic performance.

The benefits derived from natural ecosystems and their economic performance must be maintained. Damage to ecosystems should be kept to a minimum.

Biodiversity is to be maintained and fostered on farms to the best of the farmer's ability.

Energy should be used as efficiently as possible and renewable energy resources used for preference.

Naturally occurring water resources are to be used carefully and with particular respect to sustainability.

Wherever waste is unavoidable, it should be disposed of in an eco-friendly manner or recycled. Organic residues should be re-used and preferably composted.

Preference is to be given to procuring raw materials and goods from suppliers in close proximity.

### 2. 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.

### 3. Non-employment of GMO and GMO derivatives

Genetically modified organisms (GMOs) and their derivatives are incompatible with organic production. Products produced according to the Naturland standards must therefore be manufactured throughout the whole of their production and value chain without the use of genetically modified organisms (GMOs) and GMO derivatives<sup>2</sup>.

The definitions given under sec. 2 of Directive 2001/18/EC of the European Parliament and of the Council, and the exclusion criteria for genetic engineering of the eco-regulations Council Regulation (EC) No. 834/2007 and Commission Regulation (EC) No. 889/2008 apply.

Even the unintentional contamination of products certified by Naturland with genetically modified organisms may also lead to certification being denied.

### 4. Non-use of nanomaterials

By "nanomaterials", Naturland means: substances which have been consciously and deliberately designed, technically manufactured or produced by human inducement (anthropogenic) with the intention of obtaining very specific characteristics (e. g. shape, surface properties or chemical properties) at the nanoscale (approx. 1 – 300 nm in at least one dimension) such as only possible at the nanoscale. Particles with larger diameters may come under this definition in cases where there is evidence of effects specific to the nanoscale at this size.

Particles accidentally generated at the nanoscale, which can occur in the course of traditional processing methods (such as, for example, homogenisation, grinding, foaming, freezing) or as natural

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<sup>2</sup> A "GMO derivative" is any substance produced from or by means of GMOs but not containing any GMOs itself. "The use of GMOs and GMO derivatives" means their use as a foodstuff, an ingredient of foodstuffs (including additives and flavouring), processing additives (including extraction solvents), animal feed, compound feed, the raw materials of animal feed, fodder additives, processing additives for animal feed, certain products for animal feed, pesticides, fertilisers, soil ameliorators, seed, vegetative propagation material and animals.

For the purposes of these standards, the following definitions apply: 1. organism: any biological unit capable of reproduction or passing on genetic material. 2. genetically modified organism (GMO): an organism, the genetic material of which has been modified in such a way as is not possible in a natural manner by cross-breeding and/or natural recombination.

environmental elements (e. g. volcanic or airborne particles) or in foodstuffs (e. g. monosaccharides, amino acids or fatty acids) at the nanoscale are excluded from this definition.

The environmental effects on nanomaterials and their impact on human beings are so far not sufficiently known. For this reason products grown and processed and certified by Naturland must be manufactured without the application of anthropogenic nanomaterials. This includes packaging which contains nanomaterials.

## 5. 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 VI 11., where they apply to pest control). After-ripening by means of chemical substances<sup>3</sup> 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 VI 9. Storage, Bottling, Bagging and Transport).

## 6. 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.

## 7. 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 means of production can be obtained – **in exceptional cases and for a limited period of time** - from other farms according to the following priorities<sup>4</sup>:

- 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.

## 8. 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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<sup>3</sup> Ethylene gas may be used for ripening.

<sup>4</sup> The stipulations of the EU regulation on the purchase of conventional products have to be observed.

## 9. 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.

## 10. Biogas plants

Generating energy by fermenting biomass can be an important component of future energy supply within the context of renewable energy as a whole, besides wind, water, solar and geothermal energy and combustion of organic materials like wood.

Biogas plants in the organic farm combine the production of regenerative energy in a sustainable manner with the production of high-quality and healthy food, because they mainly use waste materials, allow varied crop rotations and are very energy-efficient. Plant capacity and use should be in reasonable relation to the area of operation, so that the principle aim, food production, is guaranteed.

Sensible waste heat utilisation and very high overall efficiency are to be aimed at, to achieve greatest energy efficiency.

### 10.1 Biogas plants on Naturland farms

Biogas plants on Naturland farms are run basically with ecologically generated fermentation materials. Vegetable material from conventional production<sup>5</sup>, which serves as fermentation material to operate the power plant, is limited to max. 30% as of 1<sup>st</sup> August, 2012. The objective is to reduce this percentage to zero by 2020 at the latest. Fermentation materials of conventional origin must comply with appendix 1 (permissible purchased fertilisers and soil improvement agents).

Where fermentation materials of more than 0.5 DU/ha/year are used for the operation of the biogas plant, then the delivery of any amount of fermentation substrate supplied which exceeds this value must be documented.

If it is necessary to co-operate with other agricultural operations to operate a biogas plant in order to acquire the necessary amounts of fermentation materials, preference should be given to organic farms.

### 10.2 Co-operation of Naturland farms with other biogas plants

If it is possible to co-operate with a biogas plant on a local organic farm, this shall take precedence over co-operation with a conventionally run plant.

Where a Naturland farm co-operates with a conventional biogas plant, it is only possible to take back digestate if the original matter came from the Naturland farm (e.g. clover grass). In addition, the conditions stipulated in appendix 1 (permissible fertilisers and soil improvement agents) or B. I.1 (humus management and fertilisation), in particular the maximum amounts allowed, are to be observed<sup>6</sup>.

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<sup>5</sup> Clover grass resp. grass free of mineral fertilizers and synthetic chemical pesticides is a permissible exception.

<sup>6</sup> Digestate may only be taken back upon application to and in compliance with Naturland's regulations. Digestate from biogas plants which are run solely on conventional fermented matter or on genetically modified organisms from aggregates or on liquid manure and poultry dung from conventional animal husbandry, is prohibited. Until the end of 2016 it is permissible to take back the equivalent of fermentation materials supplied with an additional margin of 15%; by the end of 2017, the maximum amount taken back shall be the same as the nutrient equivalent supplied.

### 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. Human rights

The basic rights of the people living and working on Naturland operations are respected. They must comply at the minimum with the local legal requirements, respectively the human rights listed in the UN Conventions, the International Labour Organisation Conventions and Recommendations (ILO)<sup>7</sup>, the UN conventions on children's rights<sup>8</sup> and the United Nations Declaration on the Rights of Indigenous Peoples<sup>9</sup>, should these be more comprehensive.

A product created under conditions violating basic human rights, under gross violation of social justice or infringing indigenous land rights can not be traded as a product certified by Naturland.

#### 2. Freedom to accept or reject employment

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

#### 3. Freedom of association, access to trade unions

All workers have a right to freedom of association and collective bargaining.

No one shall be discriminated against because of his or her membership in a trade union.

#### 4. 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 have the same opportunities for work of the same nature and same degree of responsibility.

#### 5. Child's rights

No children shall be employed on farms. Children may work on the farms of their own families or a neighbouring farm provided that:

- the work is not hazardous and endangers neither the health nor the safety of the children
- the work jeopardises neither the educational nor the moral, social or physical development of the children
- the children are supervised by adults while working or have been given permission by a parent or legal guardian

#### 6. 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.

#### 7. Employment conditions

Workers for the purpose of these standards are, besides the permanent workers, also seasonal workers and sub-contracted workers.

All operations commit themselves to meeting the following requirements<sup>10</sup>.

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<sup>7</sup> <http://www.ilo.org/ilolex/english/convdisp1.htm>

<sup>8</sup> <http://www.ohchr.org/en/professionalinterest/pages/crc.aspx>

<sup>9</sup> [http://www.un.org/esa/socdev/unpfii/documents/DRIPS\\_en.pdf](http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf)

<sup>10</sup> Naturland may determine that in any one country the legal control of employment conditions and the opportunities for further education offered publicly suffice to ensure compliance with these standards.

### **7.1 Contracts**

All workers receive a written contract of employment describing the basic conditions of employment.<sup>11</sup> 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.

### **7.2 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.4).

### **7.3 Wages**

Workers shall be paid at least the official national minimum wage or the relevant industry standard when employed in processing operations. Workers shall be paid in cash, or in any other manner of their choice.

### **7.4 Payment in kind**

If they so choose, workers may receive 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 for such services are not permitted.

### **7.5 Working hours**

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

### **7.6 Social benefits**

The employer ensures basic coverage for maternity, sickness and retirement. Operations with more than 10 workers need to make a policy on wages and social security available to all workers.

### **7.7 Further education**

The unit offers its employees the possibility of further education and professional training.

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<sup>11</sup> 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.

## 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. 1-8)** 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 difference between the nitrogen input and output of the whole farm.

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, to encourage soil organisms and to compensate for the loss of nutrients in the course of production. 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 external nutrient input of organic manure must not exceed 0.5 DU/ha in any one year<sup>12</sup>. For horticulture (B. III), cultivation of ornamental plants, herbaceous perennials, shrubs, Christmas trees (B. VI), fruit cultivation and viticulture (B. VII and B. VIII) and permanent tropical plantations (B. IX), separate provisions apply; by delivery of fermentation materials to biogas plants the nutrient export linked to this is taken into account<sup>13</sup>.

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 compost is recommended on the principle of the recycling of nutrients if it is certain they do not transport harmful residue (Appendix 1, 1.2). Waste and/or urban compost, faecal and sewage sludge are prohibited. The use of liquid manure and poultry dung from conventional animal husbandry, and of fermented residue from biogas plants which are run solely on conventional fermented matter or on genetically modified organisms from aggregates or on liquid manure and poultry dung from conventional animal husbandry, is prohibited.

Permitted manure and soil improvement agents are listed in appendix 1.

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<sup>12</sup> Calculation base is the effective annual nitrogen load.

<sup>13</sup> The objective is to limit the exchange of fermentation materials and digestate to organic farms. Accordingly the permissible amount of digestate which may be taken back from biogas plants which are not run by organic farms is gradually adapted to the nutrient equivalent of the fermentation materials supplied: Until the end of 2016 it is permissible to take back the amount of fermentation materials supplied and max. 15% more; as of the end of 2017 the digestate returned corresponds to the nutrient equivalent supplied.

## 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 should 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 and growth regulators 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.

Straw used for mulching must be certified at least to the standards of the EU eco-regulation.

## 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. 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. Strains which result from protoplast fusion or cytoplasm fusion or comparable methods (at the level of the cell nucleus) are not permitted.

## 4. Cleaning and disinfection agents for plant production

The cleaning and disinfection agents listed in annex 8.2 of these standards are permissible for cleaning machines, equipment and plant used in plant production.

## 5. 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.

## 6. 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.

## 7. 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 ecosystems (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.

## 8. 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 regulations (EC) No 834/2007 and 889/2008 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, loose litter materials from organic farming 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 stable area as defined under appendix 5 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. Regular cleaning and mucking out in the manner best appropriate to the housing system also need to meet requirements for a healthy housing climate. Where artificial lighting is also used, a continuous nocturnal rest period corresponding to the animals' needs must be possible. There must be appropriate drinking water systems to ensure the animals have access to an adequate water supply. 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 conditions in which animals are kept must be such that, where morbidly abnormal behaviour, injuries or diseases occur, the housing system can be excluded as a cause in each case.

The animals must have outdoor access and/or access to grazing land. The animals must always be allowed outdoor access and access to grazing land whenever the physiological condition of the animals, the climatic conditions and the condition of the ground permit. Depending on the animals' needs suitable means of protection against 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. 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.

##### 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 local growing 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.

### 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. For the latter, green feed should be offered throughout the local growing season. Only in the finishing stages may fattening animals be kept in sheds or barns without outdoor access (max. one fifth of their life span and never for longer than three months). 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. Social contact to the animals of the same species has to be possible in the form of sight or touch; the necessary sizes of the cubicles can be found in appendix 5. If after the eighth week of their life there are at least four 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). 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. If there are any problems with sows which are farrowing, it is permissible to restrict their freedom of movement<sup>14</sup> only for a few days.

Sows 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.

Pigs must have access to areas which allow them to root.

### 1.5 Poultry

Rearing in cages is prohibited.

The runs must provide sufficient natural lighting<sup>15</sup>. 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. Poultry farming always allows outdoor access. The grassland area can be used by the birds when the weather permits, and provides sufficient shelter in the form of indigenous trees, bushes and other suitable outdoor areas; these should be evenly spread all over the area so that they can be used to best effect.

Measures must be taken to prevent the nutrient discharge from exceeding 170 kg N per ha free-range area and year. The area round the shed which is most heavily used is to be strewn with bark mulch and designed in such a way that nutrient-enriched litter or the top layer of the soil can be replaced periodically and at the latest before poultry stocks are replenished.

A covered outdoor area also allows the birds to go out in bad weather. It is mandatory for all farms with over 200 laying hens or feeder poultry<sup>16</sup> (with the exception of mobile runs as well as ducks and geese). The covered outdoor area is accessible all year round (i. e. even when the weather is bad) and provide places for sand- and dust-baths. It has a solid floor and is strewn with dry straw or wood shavings, offers protection from wind and rain, rodents and predators, and has excellent daylight. In

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<sup>14</sup> to protect the piglets

<sup>15</sup> Where new sheds are built or sheds converted, the window area must be at least 5% of the floor area of the shed.

<sup>16</sup> For old buildings the transition deadline is 31.12.2014.

free range hen houses the size of covered outdoor area has to be at least one third<sup>17</sup>, in aviaries at least half of the indoor area of the hen house.

Whenever new runs are built or current ones converted, and if they are intended to house 200 birds or more, they must be inspected by Naturland to ensure they comply with the corresponding regulations before they are actually put into use.

The requirements as per appendix 6 have to be observed.

### 1.5.1 Laying hens

Grassland outdoor access is mandatory. In the grassland area there are at least 4 square metres per hen.

When calculating outdoors areas, only those areas within 150 metres of the hen house are taken into account. No more than 3,000 laying hens may be kept in any one shed and these sheds must have an opaque party wall separating them from neighbouring sheds. In any one building complex, no more than 12,000 laying hens may be kept.<sup>18</sup>

The stocking density is max. 6 hens per square metre<sup>19</sup>. Where the sheds are composed of several levels, the integrated outdoor access area is not considered as part of the free range area<sup>20</sup>.

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 seven birds) or as common nests (at least 120 square centimetres per bird).

If the animals are kept in aviaries, 12 animals per square metre of the shed area must not be exceeded in any system. No more than 3 levels are permitted.

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 7 have to be observed.

Access to the outdoor area has to be possible whenever weather conditions and the condition of the soil as well as the physiological condition of the birds allows, but at least for one third of their lifetime.

#### **Fryers and turkeys:**

Where chicken and turkeys are being fattened, the maximum stocking density in permanent sheds must not exceed 10 birds per square metre respectively 21 kg live weight per square metre of floor space for fryers and turkeys.

The fowl have to be offered elevated perches or other elevated features.

The hours of artificial lighting may exceed the normal standard during the first three days of life.

#### **Ducks and geese:**

Where ducks and geese are being fattened, the maximum stocking rate in permanent sheds must not exceed 10 birds per square metre respectively 21 kg live weight per square metre shed area.

Streams, ponds, lakes or pools have to be provided as part of the waterfowl's natural habitat. Smaller areas of water have to be reinforced and must be cleaned regularly for reasons of hygiene.

#### **Small poultry (quails and pigeons):**

The regulations for keeping laying hens and feeder poultry apply accordingly to small birds, except where otherwise stipulated below.

#### General conditions:

The maximum stocking density in the bird house is 15 birds per square metre free-range area or 3.0 kg live weight. The accessible area can be extended by max. one level in addition to the useable bird house area.

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<sup>17</sup> In sheds for feeder poultry which existed before 2014, the covered outdoor area must be at least one quarter of the size of the floor area of the shed.

<sup>18</sup> For henhouses which were certified by Naturland before 14.05.2013 the transition period is until 31.12.2018.

<sup>19</sup> 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.

<sup>20</sup> The outdoor area may only be included in the floor area of the shed if it is permanently accessible and useable and the shed existed before 01.07.2014.

The bird houses must have a scratching area strewn with litter over at least 50% of the floor space. A covered outdoor area must be accessible all year round (i. e. even when the weather is bad). It must be at least 50% of the accessible area in the heated area and the whole area must be strewn with loose litter appropriate to the species. The outdoor area in the form of an integrated run counts towards the total area of the bird house if it is permanently accessible and useable. If this is not the case, it can only be attributed to max. 50% of the indoor bird house area. The birds must have the possibility to take dust baths. Access to grass areas is recommended.

All the areas of the compound are to be equipped with as natural elements as possible to allow the birds to follow their normal behavioural patterns.

#### Quails

The headroom of the accessible area of each area depends on the requirements and the management method but must be at least 50 cm. Nests must be provided, either as single nests or group nests. At least 1 square metre nesting area per 175 hens is the rule.

#### Pigeons

The headroom of the accessible area must be at least 200 cm. In the nesting area, the pigeons must be offered building materials such as straw, twigs and leaves.

### 1.5.3 Pullets

The following additional regulations apply to pullet breeding:

In the first weeks of life, chicken rings are allowed.

From the third to the tenth week of life, max. 16 birds may be kept on the accessible space of the warm area. From the eleventh week onwards, max. 13 birds may be kept for each square metre of accessible space in the warm area. In runs on several levels (maximum allowed: three levels), the number of birds is limited to 24 per square metre ground space inside the henhouse as of the eleventh week of life.

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 achieve 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 is 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 covered outdoor area with a solid floor or a grassland outdoor area during their active periods. The covered outdoor area has to be accessible all year round (i. e. even when the weather is bad) and provide places for sand- and dust-baths. It has a solid floor and is strewn with dry straw or wood shavings, offers protection from wind and rain, rodents and predators, and has excellent daylight; it has at least 400cm<sup>2</sup> per hen and cannot be integrated into the hen house system. In the grassland outdoor area at least 0.5m<sup>2</sup> per hen is necessary.

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 fat-teners.

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 livestock systems are prohibited. The basis of animal nutrition is the feed produced on the farm itself. At least 50%<sup>21</sup> of the feed<sup>22</sup> must be produced on the farm itself (or come from a co-operation with another organic farm approved by Naturland). Exceptions can only be made for farms with livestock producing up to a maximum of 10 DU (dung units).

Purchased fodder must be certified by Naturland resp. meet certification standards approved as equivalent by Naturland (for which an application must be made in the latter case). Indigenous – and, wherever possible, local – sources are to be preferred to imported feed, if available in sufficient quantities and the desired quality.

In the case of pigs and poultry only, the limited range of feed from conventional production in restricted quantities, as listed in appendix 3, may be used for a transitional period ending 2014 at the latest, the figures to be understood as the annual average and referring to the dry matter given. In such cases the proportion of conventional feed may not exceed 25% of the daily ration, with the exception of itinerant flocks.

In the case of a feed crisis due to drought, fire or similar calamities only these feeds – 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 ("conversion feed"). If this feed is produced on the farm itself, a maximum of 100% is allowed.

Up to 20% of the fodder ration may originate from grazing on or harvesting permanent pastures or perennial fodder crops or protein plants, in the first year of conversion<sup>23</sup>, provided that these areas are part of the farmer's own lands and did not belong to a unit of the farm where organic production was practised in the last five years. If both conversion feed and also fodder from areas in the first year of conversion are used, this feed may not exceed the maximum percentage for conversion fodder.

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 3.3 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 terrestrial animal origins, fodder produced from cadavers, synthetic amino acids, growth regulators and performance enhancing substances (including copper and zinc), feed from GMOs and their products, appetite stimulants and artificial colouring are prohibited from the animal feed. The same applies to

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<sup>21</sup> In the case of herbivores, the required ratio is 60%.

<sup>22</sup> The percentage refers to the organic proportion of the dry matter in relation to the total ration.

<sup>23</sup> If the fodder crops are cultivated according to these standards and with a conversion period of the area farmed of even less than 12 months.

preservatives (with the exception of organic acids as per appendix 3.3 and processing supplements in the case of difficult climates as per appendix 3.4) 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. During the local growing season, dairy cows and mother cows must be provided green feed whenever weather conditions and the condition of the soil allows. Exclusive year-round silage-feeding is not permitted.

Calves are fed on natural milk – preferably maternal milk - for at least 3 months. Pure milk fattening without feeding roughage is not permitted.

## 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).

Lambs and kids are fed on natural milk – preferably maternal milk – for at least 45 days. Pure milk fattening without feeding roughage is not permitted.

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 have to be registered and approved. Whenever animals change their grazing areas during the migration or tending period, it is permissible for vegetation from conventional land management to be consumed, this being unavoidable, as long as this does not exceed 10% of the annual ration (in relation to the dry weight content of fodder from agricultural sources).

## 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.

As long as feed from organic sources for the augmentation of the protein quality of the feed is not available to a sufficient extent or of the right quality, feed may be bought from conventional sources as per appendix 3. 3.2. within the limits stipulated there.

Farrows are fed on natural milk – preferably maternal 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.

As long as feed from organic sources for the increase of the protein content of the feed is not available to a sufficient extent or of the right quality, feed may be bought for poultry feeding from conventional sources as per appendix 3. 3.3. within the limits stipulated there.

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

Wherever possible, chestnuts and acorns should be provided from woods certified by Naturland.

## 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<sup>24</sup> can be purchased from conventional farms up to 10% (cattle) and 20% (pigs, sheep and goats) of the existing stock<sup>25</sup>. This proportion can be exceeded in justifiable individual cases (e.g. endangered breeds, enlargement of the farm) and after approval. Where the purchase of poultry is not possible in accordance with the above conditions, chickens may be bought for fattening or pullet breeding if they are no older than

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<sup>24</sup> Female breeding must not have been littering at the purchase (“nulliparous”)

<sup>25</sup> This does not apply to farms with fewer than 10 animals.

two days when introduced to the run (application to be made to the relevant inspection body). The marketing deadlines as per section A. 1.8 have to be observed.

#### 4. Handling

The livestock owner is responsible for his or her animals' state of health. It must be ensured that he or she (and anyone else handling the animals) has been trained to handle and provide for the needs of the animals and also has sufficient experience<sup>26</sup>. The handling and feeding rhythm depends on the type of livestock and the form of housing and must take place on a regular basis; both the livestock and the plant and equipment necessary for their wellbeing must be inspected at suitable intervals. This involves particular awareness of indicators of possible aberrations (e. g. abnormal amount of soiling, injuries and disorders resulting from inappropriate conditions, the results of aggressive behaviour between the animals, signs of plumage damage or even of loss of life) and the immediate adoption of appropriate counter-measures. Skin and hair care and claw trimming must be performed regularly, depending on the type of animal. Sick or injured animals must be housed in separate compartments, depending on their condition, where they are cared for and treated. Incompatible animals have to be isolated. Separate quarters are to be provided on each farm.

#### 5. 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 or injured, their health has at all events top priority. Treatment must be fast, appropriate and with the necessary care; it 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<sup>27</sup> - must then be observed.

If animals are treated with chemical-synthetic allopathic animal medication or antibiotics more than three times in twelve months, their products may no longer be marketed with reference to Naturland, or the animals have to pass the conversion periods as per A. 1.8 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 and upon approval by the inspection body responsible. In order to keep the animals' suffering to a minimum, appropriate anaesthesia methods and/or pain killers are to be applied.

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<sup>26</sup> The Naturland regulations with regard to specific types of animals and the size of stock apply.

<sup>27</sup> Only if a waiting period of "0 days" is explicitly stated may the "minimum waiting period of 48 hours" be deviated from. In such cases "0 days" applies. This does not apply, however, to the use of antibiotics.

## 6. Shed hygiene

For the cleaning of livestock buildings as well as milking machines and other implements used in the sheds and runs cleaning agents and disinfectants according to appendix 8.1 of these standards are permissible.

## 7. 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<sup>28</sup>, embryo transfer, genetic engineering as well as the use of genetically modified species are not permitted.

## 8. 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 as possible.

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.

## 9. 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. (A Naturland co-operation agreement covers further details.)

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<sup>28</sup> 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. For greenhouses, 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. See 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<sup>29</sup>.
- 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, nor cultivation in sacks or containers. The cultivation of herbs and similar products in plant pots, where the plant is sold in the pot, and the water sprouting of chicory roots that were nursed in the soil 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.

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<sup>29</sup> Extensive application to meet the requirements of specific plants (e. g. bilberries) only upon approval by Naturland

### 3. 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. If none are available, the grower must make an application.

### 4. 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.

### 5. 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.

### 6. 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.

### 7. Food quality assurance

The nitrate content of the products has to be kept to the minimum possible by appropriate 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. Cultivation of shoots and germ buds**

The following provisions apply to shoots and germ buds in addition to the principles for plant production laid down in Part B. I.:

### **1. Primary material**

When growing shoots and germ buds, the primary materials used (seed, vegetative propagation material such as roots, rhizomes etc.) must have been certified by Naturland or a body recognised by Naturland as being on a par with their certification. Should they not be available in sufficient quantity and adequate quality, recourse can be made to primary materials certified at least to EU eco standards as per the Naturland specifications. As a general rule shoots and germ buds from conventional sources (even if not dressed) are not permissible.

### **2. Water**

The water used to grow the shoots and germ buds must be of drinking water quality.

### **3. Substratum and carrier materials**

Any substrata and carrier materials used must be permissible and safe in accordance with the Naturland standards; in the case of doubt this has to be clarified with Naturland. No synthetic carrier materials and substrata such as polystyrene, rock wool etc., are permissible.

## **V. 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.

## VI. Cultivation of ornamental plants, herbaceous perennials, shrubs, Christmas trees<sup>30</sup>

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 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.

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<sup>30</sup> 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 (including vegetal propagation material)

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 none are available, an application must be made.

If certain varieties are not available in organic quality (the farm manager has to give notice and proof of non-availability), the following procedure applies:

Conventional vegetal propagation material may be purchased and used after approval has been applied for and granted by the inspection body; the resulting plants may be declared as Naturland products. Conventional generative seedlings may be purchased and used solely for use in pots; the resulting plants may only be sold as conventional produce, and have to be declared clearly as such (different pots, labels).

### 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.

## VII. 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 and growth regulators is prohibited. A list of the pesticides permitted is given in appendix 2.

### 3. Supporting material

Wood to be used as supporting material should be acquired from local sources and be of indigenous wood. If it is impregnated, great attention has to be paid to ensuring it is eco-friendly. Tropical and sub-tropical timber is not permitted in temperate climates.<sup>31</sup>

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<sup>31</sup> This does not apply to the tropical grasses bamboo and Tonkin cane.

## VIII. Viniculture

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 1<sup>st</sup> January to 1<sup>st</sup> 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 standards. 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, herbicides and growth regulators are prohibited.

For permitted pesticides, see appendix 2.

### 5. Supporting material

Wood to be used as supporting material should be acquired from local sources and be of indigenous wood. If it is impregnated, great attention has to be paid to ensuring it is eco-friendly. Tropical and sub-tropical timber is not permitted in temperate climates.<sup>32</sup>

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<sup>32</sup> This does not apply to the tropical grasses bamboo and Tonkin cane.

## IX. Permanent tropical plantations

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 Measures appropriate to local conditions are to be taken to provide protection from erosion (e. g. by planting vegetation round the borders, constructing protective ramparts and infiltration trenches or encouraging 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.

**3.2** Drainage basins must be protected along the banks of streams and rivers and round the shores of lakes by a buffer zone of trees appropriate to local conditions, and suitable measures are to be determined in the management plan.

**3.3** Organic residue (coffee pulp, cocoa-bean husks etc.) must be recycled, preferably by turning it into compost and reintroducing it to the ecosystem or by using it for agricultural purposes (for example, as animal fodder).

**3.4** Crops which are traditionally cultivated under shade trees should continue to be so.

#### **3.4.1 Coffee and cocoa cultivation**

The following additional requirements apply to the organic cultivation of coffee and cocoa to Naturland's standards:

The organic coffee and cocoa to Naturland's standards is cultivated in agroforestry systems appropriate to local conditions, under shade trees. The important protective functions of trees in tropical ecosystems in maintaining the fertility of the soil, protecting it from erosion, maintaining the water balance, protecting drainage areas, maintaining biodiversity, binding carbon dioxide as a contribution to the protection of the climate, in moderating extremes of climate and as a provider of nutrition are to be encouraged by integrating shade trees in the cultivation system.

Where there are not shade trees, the conversion plan must determine how and where shade trees are to be planted depending on local conditions.

The diverse products of an agroforestry system employing shade trees must be used in a sustainable manner which must be laid down in a management plan. Their exploitation may not be detrimental to the positive environmental effects of the agroforestry system.

The species of trees used are those which are adapted to local agro-ecological conditions. Indigenous species are to be used to encourage the variety of tree species.

Shade trees and coffee or cocoa grow in tiers and create a wide variety of structures. Depending on local agro-ecological conditions, the following recommendations apply to shade trees:

- at least 70 shade trees per hectare and 40% all year coverage with shade trees
- at least 12 different varieties of shade trees per hectare, the principal variety of tree not exceeding 60%
- coffee and shade trees should consist of three tiers, or at least two. Where there are three tiers, the top tier consists of old trees.

Where there are justified exceptions to planting shade trees, for reasons of climate, buffer areas or agroforestry systems are to be installed in order to guarantee equivalent environmental performance. The planting density must not exceed 5,000 coffee plants per hectare.

Where wet processing is used in organic coffee cultivation, suitable methods of purifying the waste water are to be adopted. Waste water may not be discharged into surface waters before being purified.

## X. 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:

- 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.).
- In their location the plants have to be found naturally.

"Wild grown products" following this definition can be clearly distinguished from:

- products of organic agriculture (active organic cultivation)
- products of traditional agriculture (extensive conventional cultivation)
- products of former farmland which is left fallow (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.

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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%.

## XI. 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](http://www.naturland.de) and [naturland@naturland.de](mailto:naturland@naturland.de).

## XII. Aquaculture

The standards for organic aquaculture including regulations on:

- Pond culture of carp (*Cyprinus carpio*) and its accompanying species (e.g. tench *Tinca*, pike *Esox*, the *Cyprinidae* species) in ponds
- Culture of Salmonidae (e.g. trout *Trutta*, *Oncorhynchus*, salmon *Salmo* and charr *Salvelinus*.) and Coregonidae (whitefish *Coregonus*) in ponds and net cages
- Marine culture of mussels (e.g. *Mytilus edulis*) on ropes and frames
- Pond culture of shrimps (e.g. *Litopenaeus vannamei*, *Penaeus monodon*, *Macrobrachium rosenbergii*)
- Culture of tropical freshwater fishes (e.g. milkfish *Chanos chanos*, tilapia *Oreochromis sp.*, Siamese catfish *Pangasius sp.*) in ponds and net cages
- Culture of species of the families codfishes (*Gadidae*), sea breams (*Sparidae*), sea bass (*Dicentrarchidae*) and croakers/drums (*Sciaenidae*) in marine net cages
- Cultivation and collection of marine macroalgae (*Chlorophyceae*, *Phaeophyceae*, *Rhodophyceae*)

can be purchased from Naturland e.V., Kleinhaderner Weg 1, 82166 Gräfelfing, Germany, or under [www.naturland.de](http://www.naturland.de) and [naturland@naturland.de](mailto:naturland@naturland.de).

## XIII. 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](http://www.naturland.de) and [naturland@naturland.de](mailto:naturland@naturland.de).

## Appendices production

### Appendix 1: Permissible fertilizers and soil improvement agents

The input of fertilizers from organic farms as well as food waste from organic production and processing is permitted. Solid manure from conventional farms, organic and mineral fertilizer according to 1.3 and 1.5 must be applied in accordance with current legal provisions. The application of compost has to be approved by Naturland.

#### 1.1 Solid manure from conventional farms

- farmyard 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 Compost

Green compost, organic compost from separate household waste and other compost comprising material not produced on the farm<sup>33</sup> may only be used if it is proven free from harmful residues. Approval of its use must be applied for. Detailed regulations imposed by Naturland with respect to quality assurance are given in the application form.

#### 1.3 Other types of purchased manure

- Products and by-products of animal origin (horn-, hair and feather waste and the like; conventional liquid manure and conventional poultry dung and meat, blood and bone meal are prohibited)\*
- Products and by-products of herbal origin (e.g. castor cake, colza cake)
- mushroom substrata\*
- fermentation residue from biogas plants<sup>34</sup>
- 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 fertilisers with a slow effect (dolomite, carbonic acid lime, shellfish lime, sea algae lime)\*
- raw phosphates (with a low content of heavy metals)\*
- Thomas phosphate\*

#### 1.5 Only if required according to the results of soil analyses

- converter lime, lime from iron and steelworks, carbonated lime\*
- trace elements\*
- potassium magnesia (patent potassium), potassium sulphate, kainite\*
- calcium sulphate\*
- sulphur of natural origin\*
- magnesium sulphate (MgSO<sub>4</sub>)\*
- calcium chloride (CaCl<sub>2</sub>) to prevent apples from spotting\*

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<sup>33</sup> on the basis of this appendix

<sup>34</sup> Digestate may only be taken back upon application and in compliance with Naturland's regulations (The use of liquid manure and poultry dung from conventional animal husbandry, and of fermented residue from biogas plants which are run solely on conventional fermented matter or on genetically modified organisms from aggregates or on liquid manure and poultry dung from conventional animal husbandry, is prohibited.). Till the end of 2016 it is permissible to take back the equivalent of fermentation materials supplied with a margin of max. 15% more, from the end of 2017 the amount taken back corresponds to the original amount of nutrient equivalent supplied.

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<sub>2</sub>O<sub>5</sub> must not be exceeded in phosphate fertilizers.

### 1.6 Miscellaneous

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

\* The detailed stipulations of the version of Commission Regulation (EC) No. 889/2008 currently in force are to be observed.

## 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

- plant preparations (e.g. horsetail tea)
- propolis
- algae limes and extracts
- bentonites and stone meals
- quartz sand
- milk and dairy products
- edible natron
- compost extracts
- wood ash\*
- beeswax
- hydrolysed protein
- sodium silicate, potassium silicate

### 2.3 Agents against fungus diseases

- sulphur
- copper salts (max. 3 kg/ha per year, also for potatoes; for hops max. 4 kg/ha per year)\*
- lecithin
- sulphuric lime
- potassium bicarbonate, potassium carbonate
- calcium hydroxide\*

### 2.4 Agents against animal pests

- virus, fungus and bacteria preparations (e.g. *Bacillus thuringiensis*)
- preparation of *Azadirachta indica* (neem)
- pyrethrum extract from *Chrysanthemum cinerariaefolium* (synthetic pyrethroids are prohibited)
- quassia from *Quassia amara*
- oil emulsions (without synthetic chemical insecticides) on the basis of vegetable oils and paraffin oils\*
- soft soap
- ferric III phosphate
- sulphur
- rodenticides (only inside buildings and in premises where livestock is housed; only in traps/bait boxes)

### 2.5 Others

- ethylene\*
- Spinosad (only upon application and in conformity with the regulations specified in the letter of consent)

\* The detailed stipulations of the version of Commission Regulation (EC) No. 889/2008 currently in force are to be observed.

### 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<sup>35</sup>:

- 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

Areas in conversion that have been incorporated in the farm for the first time can be used as pasture or to grow permanent silage, perennial fodder crops or protein plants without further approval, even if they have been cultivated in compliance with the standards, even if the conversion period has been less than 12 months. However, the 20% limit must be observed.

#### 3.2 Pigs and poultry

Feed from conventional sources permitted for the improvement of the protein quality of pigs and poultry within a transition period ending 31st December 2014, limited to 5%<sup>36</sup>.

- sunflower-, flax- and colza seeds, -cakes and -expellers
- brewer's grains, pomace (as far as permitted under EC regulation No 889/2008)
- potato protein
- dairy products
- maize and wheat gluten feed and maize and wheat sprouts
- seaweed meal
- vegetable extracts and powders
- vegetable protein extracts (only for young stock)
- spices and herbs and molasses, max. 1% of the feed ration (dry matter/DM)
- for young stock fodder only: fishmeal/-oil from trimmings of wild fish processed for human consumption of sustainable fishery

Applicable to poultry only:

- eggs and egg products

#### 3.3 All animal species

Supplements and additives in animal feeding according to appendices V and VI of the EC regulation No 889/2008:

- trace elements\*
- carrier material of vegetable origin
- binders and anti-caking agents\*
- antioxidant substances\*
- vitamins\*
- enzymes<sup>37</sup>
- micro-organisms
- organic acids for conservation\*
- brewer's yeast\*

#### 3.4 Processing aids for silage

- lactic-, acetic-, formic- and propionic acid bacteria\*
- feed-sugar

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<sup>35</sup> In this case the requirements of the EC regulation on the purchase of products from conventional sources are to be observed.

<sup>36</sup> The percentage relates to the organic proportion of the dry matter in the feed from agricultural sources and is re-calculated annually.

<sup>37</sup> After permission has been obtained from Naturland.

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- molasses\*
- whey
- sea salt, coarse rock salt
- enzymes, yeasts\*

\* The detailed stipulations of the version of Commission Regulation (EC) No. 889/2008 currently in force are to be observed.

#### 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<sub>2</sub>O<sub>5</sub>).

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	480
fattening ducks	210
fattening turkeys	140
fattening geese	280
quails	800
pigeons	500
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**

<b>1. Cattle, sheep and pigs</b>			
	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 over 110	0.8 1.1 1.3 1.5	0.6 0.8 1.0 1.2
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 (or 10, if copulation is performed in a natural manner in the pens)	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	7 laying hens per nest or, in the case of a common nest, 120 cm <sup>2</sup> /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 If the limit of 170 kg N per hectare per year is not 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.
small poultry (in permanent houses)	15 in the heated area, max. live weight permissible 3 kg/sq. m		at least 1 sq. m for every 175 hens	(covered outdoor area = at least 50% of the accessible area in the heated area

(\*) 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
quails, pigeons	2000
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
turkey hens	100
quails and pigeons	28

### Appendix 8: Cleaning and disinfection substances

8.1 For livestock buildings and milking facilities and other livestock equipment	8.2 For machines, equipment and plant used in plant production
<ul style="list-style-type: none"> <li>• alcohol</li> <li>• formic acid</li> <li>• caustic potash</li> <li>• caustic soda</li> <li>• quicklime</li> <li>• acetic acid</li> <li>• potassium and sodium soap</li> <li>• lime</li> <li>• milk of lime</li> <li>• lactic acid</li> <li>• sodium hypochloride</li> <li>• sodium carbonate</li> <li>• oxalic acid</li> <li>• peracetic acid</li> <li>• natural essences of plants</li> <li>• phosphoric acid (dairy equipment)</li> <li>• nitric acid (dairy equipment)</li> <li>• water and steam</li> <li>• hydrogen peroxide</li> <li>• citric acid</li> <li>• cleaning and disinfection substances for teats and milking facilities</li> </ul>	<ul style="list-style-type: none"> <li>• alcohol</li> <li>• formic acid</li> <li>• caustic potash</li> <li>• caustic soda</li> <li>• benzoic acid</li> <li>• quicklime</li> <li>• acetic acid</li> <li>• potassium and sodium soap</li> <li>• lime</li> <li>• milk of lime</li> <li>• easily and completely degradable tensides (e. g. alkyl polyglycosides, (APGs) or sugar surfactants)</li> <li>• lactic acid</li> <li>• sodium hypochloride</li> <li>• oxalic acid</li> <li>• ozone</li> <li>• peracetic acid</li> <li>• compounds based on microorganisms</li> <li>• natural essences of plants</li> <li>• water and steam</li> <li>• hydrogen peroxide</li> <li>• citric acid</li> </ul>