

FiBL Projekte GmbH

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Plant strengthening agents Basic admission criteria for the Input List for organic agriculture in Germany

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1. Introduction

This document describes the criteria that need to be fulfilled in order for plant strengthening agents to be included in the Input List for organic agriculture in Germany. Additional criteria may apply for products to be included in a national list or a list of a private association. This document will be updated whenever necessary. The most recent version, which is available on the website www.betriebsmittel.de is the only valid version.

The Input List for organic agriculture in Germany – a private standard

The Input List for organic agriculture in Germany is a private standard. It is based on the relevant EU legislation (in particular Reg. 889/2008). However, it also comprises additional criteria and interpretations, which were set by FiBL, in order to ensure compliance with the objectives and principles of organic production.

Scope of products included

The EU legislation on organic farming does not specifically mention plant strengthening agents. In Germany, all plant strengthening agents listed by the Federal Office for Consumer Protection and Food Safety (BVL) can be used in organic farming. In order to guarantee the principles of organic farming when using plant strengthening agents, the Input List for organic agriculture in Germany has developed additional criteria for plant strengthening agents.

Safeguard clause

In addition to the requirements described below, the Input List for organic farming in Germany reserves the right to exclude all substances or products from all categories if the evaluation team considers that their use does not comply with the objectives and principles of organic production, or if it is suspected that they could have a negative impact on the soil, plants or environment.

2. Requirements for different product types

2.1 General requirements

Background

Plant strengthening agents are defined in accordance with § 2 No. 10 of the Plant Protection Act. Accordingly, plant strengthening agents are substances and mixtures including microorganisms that

- are exclusively intended to generally serve to keep the plants healthy, unless they are used as plant protection products in accordance with Article 2 paragraph 1 (EC) No. 1107/2009 or
- are intended to protect plants from non-parasitic impairments.

- Products in which the supply of plants with nutrients and trace substances and the stimulation of growth are in the foreground are to be classified as plant additives or soil additives. These product groups are subject to Fertilizer Act.
- The placing on the market of plant strengthening agents is regulated in § 45 of the Plant Protection Act.

Requirements

- When used correctly and properly, plant strengthening agents must not have any harmful effects on human and animal health, groundwater or any other justifiable effects, especially on the natural balance.
- The placing on the market of plant strengthening agents must have been properly reported to the Federal Office for Consumer Protection and Food Safety (BVL) beforehand or must have been added to the list of plant strengthening agents. Confirmation from the BVL is a prerequisite for inclusion in the Input List.

3. Requirements for individual components

Regulation 889/2008 does not contain a list of substances that are permitted as plant strengthening agents for organic farming. This chapter describes the requirements of the Input List for organic agriculture in Germany. These requirements apply to every component of a product. Requirements are described separately for different materials. In all cases, the raw materials must not come from GMOs.

3.1 Products and by-products of plant origin

Background

"Products and by-products of plant origin are permitted" (eg. "oilseed cake meal, cocoa shells, malt verulates"). The use of such materials is desirable because the raw materials have hardly any other uses and only undergo minor processing steps. However, there are also products on the market which are made from food (e.g. soy meal) and products which are subjected to a complex series of processing steps. The team on the Input List for organic agriculture in Germany has doubts as to whether the use of such materials from the point of view of the principles of organic farming and from the point of view of sustainability is desirable. Given the current legal background, such products are initially permitted.

Requirements

- In the end product, not more than 15 % of the total nitrogen may be present in easily soluble form (i.e. the sum of nitrate, ammonia and urea must be ≤ 15 % of the total nitrogen). For biogas digestates, this rule is currently not applied. Recycling products such as potato juice/fruit water may be admitted on a case by case base, provided that the share of easily soluble nitrogen is below 30 %.
- Hydrolysed proteins from plant material are permitted.
- Aqueous and ethanolic extracts are generally permitted, extracts with chemicals are not permitted (exception for algae products: see below). Extraction with ammonia is not permitted.
- Products and by-products of GM plants are not permitted.
- Seaweed products may be obtained by extraction with acids or alkaline aqueous solutions. Clarification: Acids/alkalines which increase the concentration of

nutrients in the final product are restricted or prohibited. This means that nitric and phosphoric acids are not allowed, because they act as easily soluble mineral fertilisers. Extraction with potassium compounds (e.g. potassium hydroxide, KOH) is allowed, but the evaluation team may reject products which contain excessive amounts of potassium deriving from the extraction agents. Manufacturers may be asked to provide the necessary data for this point to be

- verified. By-products of plant materials obtained through physical processing are permitted. The material must not be contaminated with inadmissible substances (e.g. chemical solvents) during the process. In such cases, the applicant must explain the manufacturing process including all the substances used in sufficient detail and demonstrate the absence of contaminants by chemical analysis. If the absence of contamination cannot be proven beyond doubt, the evaluation team can reject the product.

3.1.1 Fermentation products

Background

Products and by-products of plant origin can be converted into components for plant tonics through a range of microbial fermentation technologies. The evaluation must ensure that the nitrogen content of fermentation products comes from the plant materials and not from synthetic nitrogen that is added during the fermentation.

Products with a high proportion of easily soluble nitrogen have recently been developed. This contradicts the general principles of ecological production, which restrict mineral fertilizers to products with low solubility (Az. 834/2007, Art. 4 (b) (iii)). Since it is conceivable to use such a product to formulate a plant strengthening agent, the team on the Input List of organic agriculture in Germany is of the opinion that nitrogen mineralization must primarily take place in the soil and not in the production of plant strengthening agents. To ensure consistency with this principle, the Input List for organic agriculture in Germany limits the proportion of easily soluble nitrogen to a maximum of 15 percent of the total nitrogen content.

Requirements

- The microorganisms used for fermentation must not be GMOs.
- Materials with a nitrogen content of up to 5 percent are permitted.
- Materials with a nitrogen content >5 % are only allowed, if the manufacturer can clearly demonstrate that the nitrogen originates predominantly from the plant materials used as raw materials for fermentation. Detailed information on the nitrogen content of all intermediate steps in the production process is required.
- In the end product, not more than 15 % of the total nitrogen may be present in easily soluble form (i.e. the sum of nitrate, ammonia and urea must be ≤ 15 % of the total nitrogen).

- In all cases, the manufacturer must declare whether any nitrogen compounds are added as 'starters' for fermentation, and in what amounts.

3.2 By-products of animal origin

Requirements

- As defined in the general legal regulations, the hygienic requirements regarding diseases such as BSE must be observed. The products must meet the requirements of EC regulation 1069/2009 and EC regulation 142/2011.

3.3 Nitrogen containing components that were manufactured with air washers

Background

Various organic materials, such as liquid manure or sewage sludge, emit ammonia. The ammonia can be captured with air washers and converted into highly soluble nitrogen components (also called nitrogen stripping). The EGTOP recommended not to approve such materials for ecological / biological production¹.

Requirements

- Highly soluble nitrogen components resulting from air washer / nitrogen stripping are not accepted in the Input List of organic agriculture in Germany.

3.4 Guano

Background

"Guano" are accumulated excrement from seabirds, seals or cave bats. This material is permitted. However, sometimes "illegal" materials such as Chilean nitrate are traded under the name "guano".

Requirements

- In order to avoid misinterpretation and incorrect approvals, components declared as "guano" are subjected to thorough investigations into their true nature.
- Where appropriate, the evaluation team may request evidence that a particular guano product is free from human pathogens (analytical report and/or veterinary certificate, as specified in EU Reg. 142/2011).

¹ EGTOP (Expert Group for technical Advice on Organic Production): Report on Fertilizers (III), chapter 3.5.1.

3.5 Microorganisms

Background

Micro-organisms have traditionally been used in organic farming and there is no objection to their use.

Requirements for micro-organisms

- The micro-organisms must not be GMOs. A declaration of absence of GMOs is required for each microbial strain.
- The identity (species and strain) of the microorganism must be given.
- Strains which are known to have a pesticidal function are not allowed in fertilizers (see EU pesticides database).

Requirements concerning growing media for micro-organisms

- The manufacturer must specify all ingredients which are used for the growing media (if possible, use standard chemical nomenclature).
- The manufacturer must declare whether remains of the growing media used to grow the micro-organisms, or microbial products (e.g. antibiotics) can be found in the final product, and approximately how much. If remains of the growing media are present in significant amounts, their acceptability is determined case by case. The acceptability of microbial products is determined case by case; the presence of antibiotics in the final product is not allowed.
- For the growing media for micro-organisms, there are no requirements regarding the GM status. However, if remains of the growing media can be found in the final product, no DNA of GMOs must be detectable. The evaluation teams may request analytical or other evidence to verify this point.
- If the growing media for the micro-organisms contain synthetic nitrogen compounds, these must not be added in excess. In case the final product contains more than 5 % N_{mineral}, the manufacturer is obliged to demonstrate that synthetic nitrogen compounds have not been added in excess (detailed description of the production process). If this cannot be demonstrated, such products will be rejected.

3.5.1 Trace elements

In accordance with the principles of ecological production, mineral nitrogen salts (e.g. nitrate, ammonia) of micronutrients in plant tonics are not permitted.

3.5.1.1 Complexing agents for trace elements

Requirements

- Materials which are authorized as fertilizers may also be used as complexing agents for plant strengthening agents (e.g. hydrolyzed proteins, humates, citric acid)
- Lignosulfonic and heptagluconic acid as well as their salts (e.g. sodium or potassium, but not ammonium salt), are allowed.

3.5.1.2 Chelating agents for trace elements

Background

Chelating agents increase the mobility and bioavailability of heavy metals in the environment. This can lead to water pollution with toxic and/or radioactive metals and it may pose a risk for soil or water micro-organisms. The potential environmental impact of chelating agents varies greatly between substances.

- EDTA: EDTA is the most widely used and best studied chelating agent. It is of environmental concern because of its persistence and strong metal chelation.
- HEEDTA; DTPA; [o,o] EDDHA; [o,p] EDDHA; [o,o] EDDHMA; [o,p] EDDHMA; EDDCHA; EDDHSA; HBED: These chelating agents are less studied than EDTA, but the Input List for organic agriculture in Germany team assumes that they have similar environmental properties.
- IDHA; [S,S]-EDDS: These chelating agents are easily biodegradable and therefore not persistent in the environment.

Requirements

To ensure consistency with the objectives and principles of organic production, the Input List for organic agriculture in Germany excludes chelating agents which potentially have a negative impact on the environment.

- EDTA; HEEDTA; DTPA; [o,o] EDDHA; [o,p] EDDHA; [o,o] EDDHMA; [o,p] EDDHMA; EDDCHA; EDDHSA; HBED: These chelating agents are not allowed.
- IDHA; [S,S]-EDDS: These chelating agents are allowed.

3.6 Other materials

There are also specifications for some other materials, which are described below.

3.6.1 Sodium chloride (salt)

Requirements

- Rock salt and sea salt are allowed.
- Sodium chloride obtained by chemical synthesis is not allowed.

3.6.2 Humic and fulvic acids

Background

Humic and fulvic acids can be considered permissible (leonardite, which is processed in a permissible manner). Humic and fulvic acids are often made by treatment with potassium hydroxide. Since it is a synthetic form of potassium, the concentrations should be kept low.

Requirements

- Humic and fulvic acids obtained from leonardite are allowed.
- Humic and fulvic acids obtained from natural substances with thermal or physical processes are also permitted.
- Extraction with potassium compounds (e.g. potassium hydroxide, KOH; potassium chloride, KCl) is allowed. However, the evaluation team may reject products which contain excessive amounts of potassium deriving from the extraction agents. Manufacturers may be asked to provide the necessary data for this point to be verified.
- Extraction agents with nitrogen compounds (e.g. ammonia, nitrate, urea) are not allowed.
- Humic and fulvic acids obtained from the purification of drinking water are allowed, while humic and fulvic acids obtained from the purification of waste water are not allowed.

3.6.3 Synthetic nanoparticles / picoparticles

Background

Synthetic nano and picoparticles are not mentioned in Reg. 889/2008. The Input List for organic agriculture in Germany is of the opinion that these are not implicitly approved, but would require a separate listing in order to be permitted. The same argument applies to picoparticles.

Requirements

- Synthetic nano- and picoparticles (< 0,3 µm) are not allowed at the moment.
- The size limit below which a particle is considered as a nanoparticle follows national guidelines and interpretations at the moment.
- Agglomerates of nanoparticles will be evaluated case by case.

3.6.4 Co-formulants

Background

"Co-formulants" for plant strengthening agents are described in the present document. Examples are emulsifiers, carriers, antifoaming agents, dyes and preservatives. Co-formulants are not regulated by the EU organic legislation. In order to ensure compliance with the goals and principles of ecological production FiBL Projekte GmbH has certain requirements for co-formulants that take into account the effects on human health and / or the environment as well as the risk of residues.

The Input List for organic agriculture in Germany does not want to restrict the use of formulation additives to certain substances, as this would limit the potential for innovations in this area.

Requirements

- Natural materials are allowed.
- Synthetic components can be accepted under the following conditions:
 - (i) The applicant can demonstrate that they are necessary to achieve the desired function, that the desired effect cannot be achieved with a natural substance and that the substances used are used in the smallest possible amounts.
 - (ii) They correspond to the principles for co-formulants.
 - (iii) Synthetic substances that act as plant hormones (with the exception of ethylene) and synthetic wetting agents are not permitted.
- Co-formulants must not be harmful to the user or the environment. Endocrine disruptors (including potential endocrine disruptors) are not accepted. This applies to all alkylphenols and their ethoxylates, including nonylphenol and dodecylphenol. EDTA is not permitted as formulation adjuvants). FiBL reserves the right to request additional information, in particular about environmental behavior and residues in soils and / or crops. If the applicant fails to demonstrate the necessity of using a formulation adjuvant or fails to demonstrate that the formulation adjuvant does not cause residues in crops and has no unacceptable effects on human health and the environment, the product will be rejected.
- Manufacturers are free to choose the formulation auxiliaries that they consider most suitable. The EPO's old list 4 and the Safer Choice database can be consulted for guidance.

- Co-formulants must not act as plant nutrients (eg ammonium compounds) and must not have any plant protection effects (eg preservatives).
- Inadmissible substances are shown in table 1.

Table 1.: Prohibited substances

Prohibited surfactant
<ul style="list-style-type: none"> • Alkylphenoethoxylate (APEO including NPE) • Quarternary ammonium compounds (QAV)
Prohibited acids and their salts
<ul style="list-style-type: none"> • Phosphonates or combinations of ingredients from which phosphonates can arise
Prohibited Chelating- and complexing agents
<ul style="list-style-type: none"> • EDTA • HEEDTA; DTPA; [o,o] EDDHA; [o,p] EDDHA; [o,o] EDDHMA; [o,p] EDDHMA; EDDCHA; EDDHSA; HBED
Other prohibited substances
<ul style="list-style-type: none"> • Piperonyl butoxid (PBO) • Endocrine disruptors (ED), potential endocrine disruptors including nonylphenol and dodecylohol • Synthetic wetting agents

3.6.5 Ionexchange

Background

Single nutrients (e.g. phosphorus, potassium) in pure form can be obtained from plant materials with ion exchange technology. The Input List for organic agriculture in Germany considers that such purifications are not in line with the objectives and principles of organic production.

Requirements

- Single nutrients produced with ion exchange technology are not allowed.

4. Compliance with general legal regulations

The Input List for organic agriculture in Germany only includes products that comply with the relevant EU and national regulations. The following aspects are particularly relevant in connection with plant strengthening agents:

- Plant strengthening agents must be labeled in accordance with the provisions of the Plant Protection Act. Under certain circumstances, hazardous substances law may require additional labeling.
- No claims for fertilizing effects may be made for products that are permitted as plant strengthening agents.

- No claims for plant protection effects may be made for products that are permitted as plant strengthening agents.

Since such products are regulated / registered at the national level, compliance with the general legal provisions when evaluating the inclusion of products in the Input List of organic agriculture in Germany is checked. Compliance with the general legal provisions is the responsibility of the applicant companies. However, if the evaluation team on the Input List for organic agriculture in Germany suspects that a product does not comply with the relevant legal provisions, it can postpone the listing until the applicant has demonstrated legal compliance.