Fertilisers, soil conditioners and further products for use in organic crop production

Basic Admission Criteria

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1 Introduction

This document is published by the Research Institute of Organic Agriculture (FiBL) and EASY-CERT services GmbH organic inputs evaluation (EASY-CERT). It describes the criteria that need to be fulfilled in order for fertilisers, soil conditioners and further products for use in organic crop production[1] to be included in any of the FiBL and EASY-CERT Input Lists. Additional criteria may apply for products to be included in a national list or a list of a private association for organic farming. The document will be updated whenever necessary. The most recent version, which is available on the websites of FiBL (www.input-list.com) and EASY-CERT (www.betriebsmittelbewertung.at), is the only valid version.

The Basic Admission Criteria

EU organic farming is governed by a basic Regulation (Reg. (EU) 2018/848 as amended) plus the implementing regulation (Reg. (EU) 2021/1165 as amended). The Basic Admission Criteria, developed by FiBL and EASY-CERT, are a competent interpretation of this legislation, enabling a standardised evaluation of inputs for organic farming in Europe and a harmonised, cross-border approach. They provide the basic requirements that must be met for products to be included in any of the FiBL and EASY-CERT Input Lists.

Since national legislation is nevertheless relevant with regard to the categorization of certain products, there may be national differences in the conformity of individual products, due to applicable national legislation.

Scope of products included

Annex II of Reg. (EU) 2021/1165 covers only 'fertilisers, soil conditioners and nutrients'. FiBL and EASY-CERT Input Lists cover a broader scope of products and include also products such as potting soils, biodegradable mulching materials etc.

Safeguard clause

In addition to the requirements in this document as well as in the general business contract, FiBL and EASY-CERT reserve the right to exclude 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 according to Reg. (EU) 2018/848 Art. 4 and Art. 5, or if there is evidence that they could have serious adverse effects on human health and/or the environment (e.g. carcinogenic, mutagenic, toxic to reproduction, endocrine disrupting, toxic to aquatic organisms, low biodegradability, persistent).

[1] In this document, the term 'further products for use in organic crop production' refers to inputs used in crop production which cannot be categorized as fertilisers, plant protection products or another legally defined category.

2 Requirements for different product types

2.1 Fertilisers, soil conditioners and nutrients

Background

Fertilisers, soil conditioners and nutrients are explicitly mentioned and regulated in the organic legislations Reg. (EU) 2021/1165 and Reg. (EU) 2018/848.

Requirements

Fertilisers and soil conditioners may only contain

- materials listed in Annex II of Reg. (EU) 2021/1165,
- co-formulants (see section 3.9).

Materials used in fertilisers and soil conditioners must not be contaminated with non-authorized substances according to Art. 28 Reg. (EU) 2018/848. The applicant might be asked to

- explain the production process including all substances used in sufficient detail,
- demonstrate the absence of contaminants with chemical analyses. If the absence of contaminations cannot be established beyond doubt, the evaluation team may reject the product.

The product is neither a genetically modified organism (GMO[2]) itself, nor does it contain any such organism, nor was it produced "from", or "by" a GMO. For materials with an increased GMO risk[3], their GMO-free status must be declared.

[2] GMO, as defined in Art. 3 and Art. 11 of the Regulation (EU) No 2018/848

[3] See GMO-Risk List on www.input-list.com and www.betriebsmittelbewertung.at/en/

2.2 Further products for use in organic crop production

Background

For 'further products for use in organic crop production' (i.e. products used in crop production, other than fertilisers / soil conditioners and other than plant protection products), the organic legislation gives no detailed guidance. Since further products for use in organic crop production are not mentioned in Reg. (EU) 2021/1165, the evaluation criteria follow the objectives and principles of organic production based on Reg. (EU) 2018/848 Art. 4 and Art. 5. In all cases, the same rules concerning GMOs and contamination with non-authorized substances apply as for fertilisers and soil conditioners (see section 2.1).

2.2.1 Substrates and potting soils

Requirements

- Components of substrates and potting soils must only contain materials listed in Annex II of Reg. (EU) 2021/1165, in particular:
  - materials of plant origin such as compost, peat, wood fibre, coconut fibre, cocoa shells, bark,
  - inert mineral components such as clay, sand, pumice, lava, perlite, vermiculite, expanded clay and soil,
  - fertilisers complying with the present admission criteria.
- Synthetic wetting agents are *not allowed*.
- Plant-based fibres (e.g. coconut fibre) and wooden materials (incl. bark) are only allowed, if they have not been treated with synthetic substances such as nitrogen compounds (e.g. calcium nitrate).

2.2.2 Mushroom production substrates

On the one hand, requirements for substrates meant for usage in mushroom production are regulated in Annex II, Part I, 2.1. of Reg. (EU) 2018/848. On the other hand, mushroom culture waste may be used as fertiliser. The requirements for mushroom culture waste are specified in Annex II of Reg. (EU) 2021/1165.

2.2.3 Products which influence crop growth or performance

Background

Products claiming to influence crop growth or performance have traditionally been used in organic production and are widely used today. Their classifications under national legislation vary greatly between countries, as well as the technical terms used ('plant additives/aids', 'biostimulants' and 'plant strengtheners'). To ensure consistency and

harmonization between countries, FiBL and EASY-CERT apply the same Basic Admission Criteria regardless of legal classification in different countries. In line with the new fertilising products regulation (Reg. (EU) 2019/1009 as amended), such products are treated as a subcategory of fertilisers in the Basic Admission Criteria, as far as legally possible in the concerned countries. Therefore, Annex II of Reg. (EU) 2021/1165 applies.

Requirements

- The main ingredient(s) must be listed in Annex II of Reg. (EU) 2021/1165.
- Materials are only acceptable, if they do not have an effect as plant protection product.
- Co-formulants: see separate section 3.9 for co-formulants.

2.2.4 Wound sealings and trunc paints

Wound sealings and trunc paints are included in the main category of plant protection products. For further information see the criteria document for plant protection products ('basic admission criteria for products for crop and animal health').

2.2.5 Additives for biogas digestion

Background

Biogas digestate is listed in Annex II of Reg. (EU) 2021/1165. However, the organic legislations Reg. (EU) 2018/848 and Reg. (EU) 2021/1165 give no detailed guidance regarding the use of additives in digestion plants. Therefore, the Basic Admission Criteria adhere to the 'orientation catalogue for the use of biogas additives in organic farming'[4]. The use of additives which stabilize the process or enhance the output of biogas is desirable from the point of view of resource efficiency.

Requirements for additives for biogas digestion

The following additives are *permitted* for usage in biogas digestion:

- biochar (pyrolysis product of plant origin)
- algae and algae products
- products and by-products of plant origin
- stone meal, clay and clay minerals
- compost made from animal excrement, including poultry manure and composted farmyard manure
- composted or fermented mixture of plant materials

[4] Orientation catalogue for the use of biogas additives

- enzymes
- inorganic micronutrients (e.g. cobalt, copper, iron) as well as nickel and selenium compounds
- calcium and magnesium carbonate
- microorganisms
- peat as carrier for microorganisms
- calcium hydroxide to increase the pH in exceptional cases, if otherwise there is a risk of harm to the system
- additionally, substances that are permitted as fertilisers according to Annex II, Reg. (EU) 2021/1165 may be used

The following additives are *not permitted* for usage in biogas digestion:

- synthetic iodine compounds
- silicone-containing foam inhibitors, for example silicone oils
- synthetic flocculants
- urea and other mineral nitrogen compounds
- aluminium salts

2.2.6 Manure additives

Background

Manure is listed in Annex II of Reg. (EU) 2021/1165. However, the organic legislations Reg. (EU) 2018/848 and Reg. (EU) 2021/1165 give no detailed guidance regarding the use of additives in manure. Physical methods to mitigate odour, emissions, and nutrient preservation should be preferred. Manure additives are allowed as long as the materials used follow the objectives and principles of the organic production rules based on Reg. (EU) 2018/848, Art. 4 and Art. 5. The Basic Admission Criteria do not allow the use of sulphur as additive for liquid manure due to the risk of the formation of hydrogen sulphide, which is hazardous to humans and livestock[5].

Requirements

- Materials listed in Annex II of Reg. (EU) 2021/1165 may be used as manure additives.

[5] Ordinance of the Federal Minister of Agriculture, Forestry, Environment and Water Management enacting provisions for the implementation of the Fertiliser Act 1994 (Fertiliser Ordinance 2004), Austria.

- Sulphur products which are intended as additives for liquid manure (as indicated by instructions for use, e.g. on labels or technical datasheets) will not be included in any of the FiBL and EASY-CERT Input Lists.

2.2.7 Biodegradable products (e.g. mulching sheets/films and pots)

Background

Mulching sheets are regularly used in practice, especially in vegetable production. They serve several purposes such as weed suppression, water conservation, regulation of soil temperature and keeping the harvest clean. Depending on the crop and situation, it may be preferable to use non-biodegradable or biodegradable mulching sheets/films. Since biodegradable mulching sheets/films are not mentioned in Reg. (EU) 2021/1165, the evaluation criteria follow the objectives and principles of organic production based on Reg. (EU) 2018/848 Art. 4 and Art. 5. Although the criteria below were developed for mulching sheets/films, they may be applied also to other types of biodegradable products, e.g. biodegradable pots.

To avoid contamination of the environment with microplastics and non-degradable materials, such products should ideally be made entirely from bio-based materials. We recognize that to date this is not yet technically feasible. However, we want to enhance development towards this direction and therefore will further adapt criteria according to environmentally friendly innovations in this sector.

Requirements for mulching sheets/films

- For mulching films, biodegradability and compliance with limit values for contaminants must be demonstrated with certificates based on a suitable test method (e.g. EN 17033; other certificates will be evaluated case by case). Results may be submitted either for the final product, or for all components.
- For mulching sheets, bleaching of paper is generally not desirable. In cases of clearly demonstrated need, however, the evaluation teams may exceptionally accept bleached materials, if they are bleached without chlorine.

Requirements for other biodegradable products (e.g. pots)

- The same criteria as for mulching sheets/films apply; if necessary, adapted on a case-by-case base to the specific conditions of other product groups.
- For biodegradable pots, peat is *not allowed* as a raw material.

2.2.8 Seed treatments

Background

Seed treatments serve a wide range of technological functions and can generally contribute to an optimal growth start as well as the development of vigorous plants. Depending on the actual purpose (seed grading, priming, pilling, coating, etc.), products for seed treatment may vary considerably in their composition and mode of action. While seed treatments are not covered by the Reg. (EU) 2021/1165, they fall into the scope of FiBL and EASY-CERT Input Lists. Seed treatments with a plant protection effect are subject to the basic admission criteria for plant protection products. Such products are subordinate to authorization through the competent authority. All other products are evaluated according to the requirements below:

Requirements for seed treatments

- Components with an effect as fertiliser/nutrient must comply with the criteria for fertilisers.
- Components with an effect as pesticides must comply with the criteria for plant protection products.
- Microorganisms are allowed, provided that they are not GMOs.
- The need for co-formulants and auxiliaries (see below) in seed treatments is generally recognised. Components which are listed in Annex II of Reg. (EU) 2021/1165 are permitted for use in seed treatments. Other components are evaluated according to the criteria established for co-formulants.

Further requirements for auxiliaries used in seed priming

In this document, the term 'auxiliaries' refers to products which are applied to seeds during seed treatment, but which are later removed from the seeds.

- Soluble nitrogen used as signalling compounds during the priming process are allowed.
- Synthetic substances acting as plant hormones are *not allowed* (except for ethylene).
- Other materials are evaluated case by case.

3 Requirements concerning individual components

Annex II of Reg. (EU) 2021/1165 contains a list of 'fertilisers, soil conditioners and nutrients' which are allowed for use in organic farming. This chapter describes the interpretation by FiBL and EASY-CERT. The requirements are applied to each component of a product. Requirements are described separately for different materials.

3.1 Products and by-products of animal origin

3.1.1 Animal excrements

Background

Annex II of Reg. (EU) 2021/1165 allows various types of manure with the limitation 'factory farming origin forbidden'. However, there is no official definition of 'factory farming' and no general agreement across Europe how to implement this requirement. Therefore, FiBL and EASY-CERT rely on national interpretations and policies, until the European Commission implements a definition.

Requirements

- Currently, national interpretations and policies concerning the term 'factory farming' apply.

3.1.2 By-products of animal origin

Background

Annex II of Reg. (EU) 2021/1165 contains a list of permitted animal by-products.

Requirements

- Products must meet the requirements of Reg. (EU) 2019/1009, Reg. (EC) 1069/2009 and Reg. (EU) 142/2011.

3.1.3 Hydrolysed proteins obtained from animal origin

Background

The EGTOP[6] has proposed to exclude products produced using nitric acid, phosphoric acid and ammonia. Although this requirement has not yet been incorporated into the EU organic legislation, FiBL and EASY-CERT consider this requirement to be immediately applicable as it directly reflects the principles of organic production.

[6] EGTOP (Expert Group for technical Advice on Organic Production): Report on Fertilisers (VIII), chapter 3.1.2.

Requirements

- Hydrolysed proteins from animal origins are neither to be produced using nitric or phosphoric acid nor ammonia.

3.1.4 Nitrogen fertilisers produced by air scrubbers

Background

Various organic materials such as manure or sewage sludge emit ammonia. The ammonia can be captured with air scrubbers and transformed into highly soluble nitrogen fertilisers (also called nitrogen stripping). The EGTOP has recommended not to authorize such materials for organic production[7]. Furthermore, nitrogen fertilisers produced by air scrubbers are not mentioned in Annex II of Reg. (EU) 2021/1165.

Requirements

- Highly soluble nitrogen fertilisers produced by air scrubbing / nitrogen stripping are not accepted according to the Basic Admission Criteria.

3.1.5 Guano

Background

'Guano' in the true sense of the word is accumulated excrement of seabirds, seals, or cave-dwelling bats. This material is allowed. However, non-permitted materials such as Chilean nitrate are sometimes also traded under the denomination 'guano'.

Requirements

- To avoid misinterpretations and erroneous admission, components declared as 'guano' will be subject to more in-depth investigations regarding their true nature and origin.

3.2 Products and by-products of plant origin

Background

Annex II of Reg. (EU) 2021/1165 allows 'products and by-products of plant origin for fertilisers' and gives the following examples: 'oilseed cake meal, cocoa husks, malt culms'. There are also plant-based fertilisers on the market which undergo a complex series of processing steps (e.g. hydrolysation, fermentation, extraction) or are by-products in food production. FiBL and EASY-CERT reserve the right to review the

[7] EGTOP (Expert Group for technical Advice on Organic Production): Report on Fertilisers (III), chapter 3.5.1.

production processes of such products to determine their eligibility as 'products and by-products of plant origin.'

Requirements

- By-products of plant materials derived by physical processing are allowed. The basic requirements in section 2.1 for fertilisers, soil conditioners and nutrients must be complied with.
- All extractants used must be declared to the evaluation team.
- Aqueous and ethanolic extracts are generally allowed.
- Synthetic extractants are generally *not allowed* (with exceptions according to Reg (EU) 2021/1165 Annex II, e.g. for seaweed products: see section 'materials of aquatic origin' below).
- Extraction with ammonia and other easily soluble nitrogen compounds are *not permitted* according to Reg. (EU) 2018/848 Art. 5 g) ii) and iii).

3.2.1 Fermentation products

Background

Products and by-products of plant origin can be transformed into fertilisers through a range of microbial fermentation technologies. Not all types of fermentation products (e.g. vinasses) are explicitly mentioned in Annex II of Reg. (EU) 2021/1165, but FiBL and EASY-CERT consider that they are covered by the entry 'Products and by-products of plant origin'.

Requirements

- The nitrogen content in fermentation products must originate from the plant materials themselves and not from synthetic nitrogen added during the fermentation process.
- In all cases, the manufacturer must declare whether any synthetic nitrogen compounds are added as 'starters' for fermentation, and in what amounts.

3.2.2 Compost and digestate

Background

Annex II of Reg. (EU) 2021/1165 contains some specifications on raw materials and heavy metal content of the end product, but not on macroscopic impurities (e.g. plastic, metal, glass). Some national legislations as well as Reg. (EU) 2019/1009 set limits for macroscopic impurities in their fertiliser legislation. It is primarily the responsibility of the applicant companies to ensure that their products comply with these limits. However,

the national teams may request analyses to verify whether these requirements are fulfilled.

Requirements

- Digestates are only acceptable if the digestion additives are acceptable (see separate section).
- Composted fermented bio-waste is only acceptable if it complies with the legal limits for contaminants mentioned in Annex II of Reg. (EU) 2021/1165.

3.2.3 Potassium fertilisers from sugar production

Background

Potassium sulphate is produced in the manufacture of sugar. The potassium and sulphur both originate from the plant biomass. This material is therefore allowed.

Requirement

- Potassium from vinasse (called 'vinasse potassium' or 'vinasse kali') is allowed.

3.2.4 Products made from peat

Background

The use of peat should be minimized for environmental, climate and biodiversity reasons. A certain use of peat is necessary in horticulture and therefore allowed according to Reg. (EU) 2021/1165 Annex II. The Basic Admission Criteria allow peat in potting soils, and as a co-formulant (e.g. carrier material for microorganisms). Furthermore, peat is permitted in growing substrates for mushroom production according to Reg. (EU) 2018/848 Annex II Part I, Article 2.1. By contrast, the use of peat products for other purposes is not essential and therefore *not allowed*.

Requirement

- Other products than mentioned above in section 3.2.4 made from peat (e.g. peat extracts) are *not allowed*.

3.2.5 Other single nutrients isolated from plant materials

Background

Potassium sulphate is also produced in the manufacture of biofuels ('biodiesel'). This process involves an ester interchange with potassium hydroxide and a precipitation with sulphuric acid. FiBL and EASY-CERT consider this as chemical processes.

Phosphates can be recovered from plant biomass with chemical processes that resemble the manufacture of superphosphate. FiBL and EASY-CERT consider this as a chemical process.

Single nutrients (e.g. phosphorus, potassium) in pure form can be obtained from plant materials with ion exchange technology. FiBL and EASY-CERT follow the argumentation of the EGTOP[8] and consider such purifications not in line with the objectives and principles of organic production.

Requirements

- Potassium sulphate from the manufacture of biofuels is *not allowed*.
- Phosphates recovered from plant biomass are *not allowed*.
- Single nutrients produced with ion exchange technology are *not allowed*.

3.3 Microorganisms

Background

According to Reg. (EU) 2021/1165 Annex II microorganisms may be used to improve the overall condition of the soil or to improve the availability of nutrients in the soil or in the crops. Microorganisms complying with Reg. (EU) 2021/1165 Annex II are therefore allowed for usage in organic farming.

Requirements concerning microorganisms

- The microorganisms 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 fertilisers (see EU pesticides database[9]).
- Yeast extracts (from non-GM yeast) are allowed as fertilisers.

Requirements concerning growing media for microorganisms

- 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 microorganisms, or microbial products (e.g. antibiotics) can be found in the final product, and approximately how much. If remains of the growing media

[8] See EGTOP report on Food VI and Feed IV; EGTOP report on Food III; EGTOP Report on Food I.

[9] weblink EU pesticides database

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 microorganisms, 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.
- For the growing media criteria for co-formulants are applied.

3.4 Inorganic plant nutrients

Annex II of Reg. (EU) 2021/1165 contains a list of materials which may be used as sources of phosphorus, potassium, calcium, magnesium and sulphur.

3.4.1 Liming materials (magnesium and calcium carbonate) and Kieserite (magnesium sulphate)

Requirements

- Liming materials, as well as Kieserite of natural origin are allowed. Liming materials include mollusc waste and eggshells.
- These raw materials may not be processed with acids or other synthetic substances.
- For liming materials processes that change the chemical composition are excluded (e.g. calcination / conversion of calcium carbonate to calcium oxide or hydroxide).
- Persistent flocculants are *not allowed* (e.g. polyacrylamide).
- The production process must be documented with a flow chart. All kind of treatments (including calcination) must be declared.

3.4.2 Inorganic nitrogen

Requirements

- Mineral nitrogen fertilisers are *not permitted* according to Reg. (EU) 2018/848 Annex II Part I, 1.9.8 and Article 5(g)(iii). This includes synthetic compounds such as ammonia, nitrate and urea, but also natural sources such as 'Chilean nitrate' (also known as 'Chile salpeter', 'Peru salpeter', 'Caliche').

3.4.3 Stone meal, sand of natural origin, clays and clay minerals (e.g. perlite, sand, vermiculite)

Requirements

- Stone meal, sand of natural origin, clays and clay minerals are allowed.
- For specific materials known to be on the market also in synthetic form (e.g. apatite), applicants have to confirm that the materials are of natural origin. In particular, they may undergo mining, milling and heat-treatments. Processing or extraction with acids or other chemical substances is *not allowed*. Pyrogenic silica and other synthetic forms of silicium are *not allowed*.
- Split from crushed bricks may be used as a component of substrates. However, the raw material is limited to unused, untreated bricks (exception: addition of minerals and metal oxides for colouring purposes may be permitted on a case-by-case base).

3.4.4 Selenium salts

Requirements

- Selenium salts are allowed.
- They may only be used in case of deficiency in the soils used for animal rearing, and/or grazing or for the production of feed crops.

3.5 Inorganic micronutrients

Background

With respect to inorganic micronutrient fertilisers, the EU organic legislation Reg. (EU) 2021/1165 refers to the EU fertiliser legislation (Reg. (EU) 2019/1009). Therefore, the general interpretation in the European organic sector is that all inorganic micronutrient fertilisers containing any of the authorized inorganic micronutrients, with or without chelating agents (e.g. EDTA, HEEDTA, DTPA, EDDHMA, HBED, IDHA or EDDS) or complexing agents are allowed for organic farming, provided that the specified limits for contaminants are complied with. In addition, natural materials which have a complexing effect for micronutrients (e.g. hydrolysed proteins, humic and fulvic acid, citric acid) are also allowed.

Requirements

- All inorganic micronutrients listed in the EU fertiliser legislation Reg. (EU) 2019/1009 are allowed.
- Consistent with Reg. (EU) 2018/848 Annex II Part I, 1.9.8 and Article 5(g)(iii), mineral nitrogen salts (e.g. nitrate, ammonia) of micronutrients are *not allowed*.

- Natural materials may also be used as complexing agents (e.g. hydrolysed proteins, humic and fulvic acids, citric acid).
- Lignosulfonic and heptagluconic acid as well as their salts (e.g. sodium or potassium, but not ammonium salt), are allowed.

3.6 Materials of aquatic origin

Background

For various materials of aquatic origin, the EU organic legislation Reg. (EU) 2021/1165 Annex II restricts their origins to organic production or sustainable sources. FiBL and EASY-CERT provide a specific form[10] to declare conformity of such materials with the applicable requirements as defined in Reg. (EU) 2018/848 Annex II part III and Reg. (EU) No 1380/2013 Article 2.

Requirements

- For algae, algae products, mollusc waste and chitin (polysaccharide obtained from the shell of crustaceans) a declaration on origin is required. Please use the dedicated form provided. For comparable products, FiBL and EASY-CERT reserve the right to apply similar requirements.
- Algae products may be obtained by:
  - Physical processes including dehydration, freezing and grinding,
  - Fermentation,
  - Extraction with water or aquaeous acid and/or alkaline solutions. Clarification: Aquaeous acid and/or alkaline solutions which increase the concentration of nutrients in the final product are restricted or prohibited. This means that nitric and phosphoric acids are *not allowed* according to Reg. (EU) 2018/848 Annex II Part I, 1.9.8 and Article 5(g)(iii), 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.

3.7 Other materials

Several other materials are also authorized according to Annex II of Reg. (EU) 2021/1165. The following sections provide guidance for selected materials.

[10] See Declaration on sustainability for materials sourced from aquatic environment on on www.input-list.com and www.betriebsmittelbewertung.at/en/

3.7.1 Humic and fulvic acids

Background

Humic and fulvic acids are mentioned in Annex II of Reg. (EU) 2021/1165. The EGTOP has recommended authorizing humic and fulvic acids for organic production, with certain restrictions[11].

Humic and fulvic acids are often manufactured by treatment with potassium hydroxide. Because this is a synthetic form of potassium, the levels should be kept low.

Requirements

- Humic and fulvic acids obtained from leonardite and other natural humic rich sources listed in Annex II of Reg. (EU) 2021/1165 are allowed. The use of virgin peat is limited to horticulture, meaning it is *not permitted* as a source to obtain humic and fulvic acids.
- Humic and fulvic acids obtained from processed organic precursors based on natural materials may be allowed in the absence of contaminants.
- Humic and fulvic may be obtained with thermal or physical processes, as well as by inorganic salts/solutions. However, extraction agents with nitrogen compounds (e.g. ammonia, nitrate, urea) are *not allowed*.
- 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.
- 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*.

3.7.2 Biochar

Background

Biochar is mentioned in Annex II of Reg. (EU) 2021/1165, with restrictions on raw materials used for manufacture and on contaminants present in the final product.

Requirements

- Raw materials are limited to
  - organic materials of plant origin,

[11] EGTOP Report on Fertilisers (III), chapter 3.3.

- plant materials, when treated after harvest only with products included in Annex I of Reg. (EU) 2021/1165.

- The product must be obtained using pyrolysis.
- Relevant limits for contaminants and input materials for pyrolysis set in Reg. (EU) 2019/1009 must be complied with.
- Applicants must submit an analysis of PAHs (polycyclic aromatic hydrocarbons) in the final product. The analysis may not be older than 12 months at the time of submission. The level of PAH_{16} may not exceed 6 mg/kg dry matter. The analysis must be done according to the methods specified by the European Biochar Certificate (extraction with toluene).

3.7.3 Materials which may have a use in filtering beds

Background

Materials such as sand, zeolite, perlite, vermiculite and clinoptilolite may be used in filtering beds, which can result in their contamination. Companies should be aware that different legal requirements may apply to unused ('virgin') materials and to used materials ('waste').

Declaration policy

Whenever a material has been previously used as filtering material, this fact must be clearly stated by the applicant during application. If there is no mentioning of such an earlier use, the evaluation team will assume that the declared materials are virgin materials previously unused.

3.7.4 Synthetic nanoparticles

Background

The organic legislation Reg. (EU) 2018/848 Art 7(e) excludes food containing, or consisting of, engineered nanomaterials, but makes no such requirement for inputs. According to the recommendations of the EGTOP[12], FiBL and EASY-CERT consider that nanoparticles are not implicitly prohibited, but would require a separate listing in Reg. (EU) 2021/1165 Annex II in order to be authorized.

Requirements

- Synthetic nanoparticles are *not allowed*.

[12] see EGTOP Report on Fertilisers (II), chapter 4.8.2.

- The size limit below which a particle is considered as a nanoparticle follows the definition of the European Commission[13] (i.e. 50 % or more of the particles are in the range between 1 nm and 100 nm).

3.7.5 Phosphonate / phosphonic acid

Manufacturers must take great care to avoid the content of phosphonate / phosphonic acid (also in traces) in their products. The evaluation teams may request analyses to verify this point.

3.8 Components from organic production

If a company claims that a component is organic or that it derives from organic production, a valid certificate from an accredited certifier must be submitted with the application and has to be renewed before expiry.

3.9 Co-formulants / additives

Background

In this document, product components with another purpose than nutrients and soil conditioners are referred to as 'co-formulants'. Examples include emulsifiers, carriers, antifoaming agents, dyes and preservatives. Such components are also known as 'additives' in the fertiliser industry. Co-formulants are not explicitly regulated by Annex II, Reg. (EU) 2021/1165. To ensure compliance with the objectives and principles of organic production, FiBL and EASY-CERT have certain requirements for co-formulants, which take into account effects on human health and/or the environment as well as the risk of causing residues.

Manufacturers are free to choose those co-formulants which they consider to be most appropriate. The EPA's old list 4, and the 'Safer Choice' database may be consulted for orientation purposes. FiBL and EASY-CERT do not want to restrict the use of co-formulants to certain substances, as this would limit the potential for innovations in this field. Instead, it applies a flexible scheme based on the following principles:

Requirements

- All co-formulants must be explicitly declared towards the evaluation team.
- Materials listed in Annex II of Reg. (EU) 2021/1165 are allowed.
- If the materials listed are not sufficient to achieve these effects, other materials may be used, provided that the applicant can demonstrate their need.
- Natural substances should be used in preference.

[13] https://ec.europa.eu/environment/chemicals/nanotech/faq/definition_en.htm

- Where a synthetic co-formulant is used, the applicant must demonstrate that the desired effect cannot be achieved with a natural substance.
- If synthetic co-formulants are necessary, the lowest possible amounts must be added.
- Co-formulants at the given amount in the fertiliser formulation must not be harmful to human health or the environment and should be easily biodegradable. They should not cause residues in crops. FiBL and EASY-CERT reserve the right to request additional information, particularly on environmental fate and on residues in soil and/or crops. If the applicant fails to prove the need to use a co-formulant, or if he fails to demonstrate that the co-formulant does not cause residues in crops and has no unacceptable effects on human health and the environment, the product will be rejected.
- Endocrine disruptors (including potential endocrine disruptors) are not accepted. This applies e.g. to all alkylphenols and their ethoxylates, including nonylphenol and dodecyl phenol.
- Co-formulants must not act as plant nutrients and must not have a plant protection effect, e.g. ammonium compounds and ammonium lignosulfonate are *not allowed*.
- Quaternary ammonia compounds (QAC) may not be added.
- Colouring may be accepted in seed treatments and mulching sheets/films, if there is an agronomic need. Colorants will be evaluated case-by-case.

4 Compliance with general legislation

FiBL and EASY-CERT Input Lists include only products that comply with the applicable EU and national legislation. Compliance with general legislation is in the responsibility of the applicant companies. However, if evaluation teams suspect that a product does not comply with the relevant legislation, they may postpone inclusion into the list until the applicant has demonstrated legal compliance. In the context of fertilisers, soil conditioners and crop management tools, the following aspects are particularly relevant:

- In countries/product types which must be registered, this is a requirement for admission into the input lists.
- Products with an effect on pests or diseases or with a biocidal effect must be registered in compliance with the relevant legislation.
- For products which are not registered as plant protection products, no claims of a plant protection effect may be made.

5 Recommendations for use

It is the responsibility of the applicant companies to ensure that the recommendations for use of their products given on product labels, technical sheets, publications and websites are consistent with organic farming practices. If the national evaluation teams suspect that a product is intended for a use that does not comply with organic farming practices, they may postpone inclusion into the list or remove the product from the list until the applicant has amended the recommendations for use accordingly.

Impressum

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