

**Standards and Individual Procedures for
Judging Compliance of Substances Listed
in Appendices 1 and 2 of Japanese
Agricultural Standards for Organic Plants
(Preliminary Translation)**

Version for Notice 1180, August 27, 2009

**FY 2010 Commissioned project of the Ministry of Agriculture,
Forestry and Fisheries**

**Prepared by Exploratory Committee for Listing of Usable
Organic Substances
(Organizer: Mitsubishi Research Institute Inc.)**

Introduction

This brochure was prepared in FY 2010 by “Commissioned project on improvement of reliability of the Organic JAS” of the Ministry of Agriculture, Forestry and Fisheries. When the Japanese Agricultural Standards (JAS) certified business entities of organic plants use substances in compliance with JAS, how they judge such substances to be compliant or non-compliant depends on those entities and/or registered certifying organizations. The judgments for the same substances are sometimes divided into being compliant and non-compliant. The Commissioned project on improvement of reliability of the Organic JAS is a multiple-year project. The aim of the project is that substances judged to be compliant are listed in the name of the Ministry of Agriculture, Forestry and Fisheries, in order to enable production process managers to select substances without another confirmation of such substances.

The FY 2010 project, as a previous step of the entire project, focused on listing the standards for evaluations and specific procedures of substances, in order to enable the list to be made use of in the subsequent fiscal years.

Purpose of use of this brochure

- To use as evaluation procedures for listing projects to be performed in the subsequent fiscal years.
- To use as procedures in evaluations by production process managers or registered certifying organizations. Because the scheduled list of substances will not cover all the substances in compliance with JAS, unlisted substances have to be evaluated individually.

Notes on using this document

- This brochure was prepared based on the Japanese Agricultural Standards (hereinafter referred to as JAS) for Organic Plants of such fiscal year (Notice 1180, August 27, 2009). The JAS is scheduled to be revised in FY 2011, and therefore, this document has to be used by considering the changes after the revision.
- This brochure is intended for evaluations of compliance in the use of substances introduced from outside. As is mentioned at the beginning of the evaluation standards, production process managers of organic plants have to be always sure that soil formation has to be performed according to the principle of organic plant production (Article 2) and the main standards of cultivation management (Article 4) before they use substances introduced from outside, and that those substances are only

supplements.

- Respective business entities and registers certifying organizations are required to evaluate substances according to these evaluation standards and procedures after a certain get-acquainted period.
- Organic JAS certified business entities overseas will judge substances almost according to these evaluation standards and procedures.
- Some parts, in which agreement was not reached in the project of this fiscal year, will be continuously discussed in the next FY project. Then, as for those parts, the divided viewpoints are provided in the procedures.

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I. Fertilizers and soil improvement substances (Appendix 1)

1. Standards of judging compliance of fertilizers and soil improvement substances

1.1. Contents specified in the JAS

1.1.1. Principle of cultivation management of organic plant production

For cultivation management according to the organic JAS, the Article 2 of the JAS, the principle of organic plant production, and the Article 4 of the JAS, the section of cultivation management of production methods have to be observed.

Principle of organic plant production (Article 2)

In order to maintain and improve the natural cyclical function of agriculture, organic plants shall be produced in fields managed by the cultivation methods, in which chemically synthesized fertilizers and agricultural chemicals are avoided, productivity of fields based on the soil properties (skip) is provided, and the environment burden resulting from agricultural production is reduced to as low as possible.

Production methods (Article 4): Section of cultivation management

Productivity of fields based on the soil properties has to be maintained and improved only by the methods applying manure derived from residues of plants produced in such fields and using functions of organisms living or growing in or around such fields. However, when productivity of fields based on the soil properties cannot be maintained or improved only by the methods using functions of organisms living or growing in or around such fields, only fertilizers and soil improvement substances listed in the Appendix 1 (only those substances which were chemically synthesized in production processes were not added into and those whose raw materials were not produced with recombinant DNA technology. Same as below) are available to be used.

The above standards for judgments are for judging compliance in the use of substances of the Appendix 1 specified in the part after “However, when...” in the section of cultivation management. It is, however, not considered that all the substances complying by the judgment standards can be used. The standards for judgments are based on the importance of soil formation described in the above principle and the former sentence in the section of cultivation management. Substances in

compliance with the Appendix 1 have to be used, premising the above.

1.1.2. Rules regarding substances introduced from outside

The two conditions on the above substances listed in the Appendix 1 are re-described. All of the substances listed in the Appendix 1 have to be as follows:

- Not added with substances chemically synthesized in the production processes
- Not derived from the raw materials produced using recombinant DNA technology.

1.2. Scope of confirmation

1.2.1. Definition of terms

Term	Definition
Chemically synthesized substances	Chemically synthesized substances are substances produced by chemical synthesis, which is a process to change compounds and elements to substances with different structures by chemical means (not including chemical changes related to life phenomena, such as fermentation and maturation) (quoted from the definition of the Article 3 of the special cultivation labeling guideline) (hereinafter referred to as chemically synthesized substances).
Addition of chemically synthesized substances	Chemically synthesized substances are added in production processes (including kinds of auxiliary agents and catalysts).
Chemical treatment	Treatment process using chemically synthesized substances (including the cases when chemical synthesis reactions do not occur in production processes, and when final products do not contain chemically synthesized substances used in the treatments).

Note 1: “Addition of chemically synthesized substances” and “Chemical treatment” is specified in the JAS as follows:

- Addition of chemically synthesized substances:

The JAS provides that chemically synthesized substances may not be added in production processes. Therefore, chemically synthesized substances may not be added in all substances listed in the

Appendix 1.

- Chemical treatment:

As for some of the substances in the Appendix 1, it is specified in the column of standards that only substances derived from natural substances “without chemical treatment” are permitted.

1.2.2. Confirmation regarding production processes

(1) Scope of production processes

The following processes are intended for confirmation:

a. From introduction of raw materials (all introduced materials including main raw materials, additives, and auxiliary agents) to packaging of products.

b: The above “a” and processes in which raw materials used in the process “a” are surely derived from natural materials, as for the fertilizers, soil improvement substances, and materials generally managed which are described in the column of the standard in the Appendix 1 as that “things which are derived from natural substances or natural substances without chemical treatment.”

(2) Addition of production processes

The section mentioned as above is supplemented by the following:

- As for the above “a,” different cases are assumed about whether or not additional raw materials of the raw materials should be intended for confirmation. More information is described in Chapter 2 on individual procedure for judging.

- As for “mixing” (respective properties of raw materials are maintained), the production processes of the above “a” of such raw materials will be confirmed.

1.2.3. Confirmation regarding genetic recombination

(1) Scope of the production processes of raw materials regarding genetic recombination

When plants, for which genetic recombination technology has already been developed, are used as raw materials, it will be confirmed whether genetic recombination is employed in the production methods of such plants.

(2) Addition of production processes of raw materials. Substances, which have been specified by the interim measures as non-genetically engineered raw materials and are difficult to be obtained for such substances, shall not be intended for confirmation.

(3) Scope of confirmation of enzymes, microorganisms, and others

Only enzymes, microorganisms, and others used in the production processes of such substances shall be confirmed. Enzymes, microorganisms, and others used in the production processes of raw materials of such substances need not be confirmed.

The scope of confirmation of media used for cultivation of microorganisms is described in the individual procedures.

1.3. Methods of confirmation

1.3.1. Obtaining information regarding substances

(1) Obtaining a chart of production processes

A person who evaluates substances performs confirmation based on the information of raw materials and a production process chart of such substances obtained from the producer. It is preferable to obtain necessary and sufficient information described in the format prepared by such business entities. Another format, however, which includes such information, can be used.

In addition, all the registration certificates and notifications of fertilizers of raw materials are required to be submitted if applicable.

Producers of substances are required to responsibly confirm the descriptions of information on sources of raw materials in submitting such data.

(2) Dates of judgment and expiration

Information on substances to be obtained has to clearly specify dates of preparation and expiration. On the occurrence of changes of descriptions of application, such as changes of raw materials, additives, and production processes, producers of substances have to immediately notify the changes. Without immediate notification of such changes, such substances shall be eliminated from the list of available organic substances.

Moreover, it is preferable to define, as specifically as possible, the expiration date of the results of judgment of compliance.

1.3.2. Points to be noted in confirmation

(1) Important notes on the categories of the official standards

When substances are granulated or formed using only raw materials listed in the JAS Appendix 1, confirmations have to be performed because they are sometimes determined to be compliant even if that are listed as compound fertilizers in the official standards.

(2) Important notes on additives

The following substances have to be confirmed that it is properly reported whether they are used, on account of occasional failure of the report:

Anti-caking agents, anti-scattering agents, anti-hygroscopic agents, anti-precipitants, anti-floating agents, anti-corruption agents, odor-control agents, granulation accelerators, formation accelerators, spreading accelerators, compositional-homogenization accelerators, dehydration accelerators, drying accelerators, aggregation accelerators, fermentation accelerators, effect-accelerating agents, coloring accelerators, dispersion accelerators, reaction-suppressing agents, and nitrification-suppressing agents.

1.4 Judgment standards

1.4.1. Judging whether substances are “not added with substances chemically synthesized in the production processes.”

(1) Methods of judging

Based on the information submitted (including copies of registration certificates and notifications of fertilizers of raw materials), the following is confirmed:

- a. Raw materials used in the production processes of the substances described in the Appendix 1 as “substances derived from natural substances or natural substances without chemical treatment” are derived from natural substances or substances from natural substances without chemical treatment.
- b. Additives used are not chemically synthesized substances.
- c. The production processes of the raw materials of substances whose raw materials are also required to be confirmed do not include any chemical treatment processes.

Out of the contents described in the “substances and requirements for addition” in the CODEX, the following standards have to be considered for judgment:

“Substances whose raw materials are derived from plants, animals, microorganisms, or minerals and can be treated physically (e.g., mechanically and thermally) and enzymatically or microbiologically (compost and fermentation) (chemical treatment is possible to be done when the treatment methods as mentioned above are depleted for only substances used as carriers and linkers).”

(2) Exemptions given in the Appendix of the JAS

a. Oil extraction with organic solvents

Despite the previous section, the following described in the Appendix 1 of the JAS is applied:

As for “substances of plant or animal origin from food and textile industries,” oil extraction with organic solvents is excluded.

b. Use of granular substances synthesized chemically

As for granular substances of fertilizers listed in the Appendix 1, the use of chemically synthesized lignin sulfonate is permitted in the section of standards of “granulating and anti-caking agents of fertilizers.”

(3) Regulation of “Notice No. 1005”

The Item 1 of Article 10 of Ministerial Order of the JAS provides that the Minister of Agriculture, Forestry and Fisheries specifies that “Chemically synthesized fertilizers and soil improvement agents used for unavoidable reasons,” which is called “Notice No. 1005” (hereinafter referred to as “Notice No. 1005”). The official name is “Chemically synthesized Agricultural Chemicals, Fertilizers, and Soil Improvement Substances Specified by the Minister of Agriculture, Forestry and Fisheries in the Item 1, the Article 10 of the Enforcement Regulations for the Law Concerning Standardization and Proper Labeling of Agricultural and Forestry Products” (Notice No. 1005 of the Ministry of Agriculture, Forestry and Fisheries, enacted on July 14, 2000; Notice No. 1181 of the Ministry of Agriculture, Forestry and Fisheries, finally revised on August 27, 2009). The item provides that the following substances, despite being chemically synthesized, are permitted.

[II. Fertilizers and soil improvement substances]

Fertilizers mainly for supply of sulfur, calcium chloride, hydrated lime, microelements, aluminum calcium phosphate, vinegar, and lignin sulfonate.

These substances are some of the substances listed in the Appendix 1.

(4) Interpretation of production processes of raw materials

Production processes of raw materials of some substances are not required to be confirmed, if the description of “substances derived from natural substances or natural substances without chemical treatment” is not included in the conditions of substance categories in the Appendix 1. For instance, the origins of such substances are not required to be confirmed in:

- Methods of plant cultivation, when plants and substances derived from the residue of plants are used.
- Methods of production of livestock, when manure derived from the excrement of the livestock is used (i.e., feed of livestock, substances to be administered for health control, etc.).
- Litter collected along with excrement, when manure derived from livestock excrement is used (however, it has to be confirmed whether the litter has been derived from construction-wood waste).

(5) Products from the mixture of permitted substances

As for products obtained from chemical reactions caused by mixing substances permitted in the Appendix 1, 2 different opinions are expressed. One is that such products are permitted because individual substances of the products are permitted. The other is that such products are not permitted because final products are produced from chemical synthesis reactions.

For example, double salt produced by mixing kieserite and natural potassium chloride.

Those substances are not listed in this listing project, and however, it is possible that they may be permitted depending on further considerations.

1.4.2. Judging whether substances are “not produced with raw materials produced using recombinant DNA technology.”

(1) Target plants

When the following plants are used as raw materials, the sections given below have to be confirmed.

[Raw material plants required to be confirmed]

(Processed food quality labeling standards concerning genetic recombination: Appendix 1)

1. Soybeans (including green soybeans and soybean sprouts)
2. Corns
3. Potatoes

4. Rapeseed
5. Cottonseed
6. Alfalfa
7. Sugar beets

Moreover, when substances from microorganisms and enzymes for producing fertilizers are used, the sections given below have to be confirmed.

(2) Methods of judging

- a. The above plants are not derived from the plants produced by recombinant DNA technology. (The plants, which have not clearly indicated whether they are genetically recombined ones, are not permitted.)
- b. Enzymes, microorganisms, and others used for production processes of substances have not been developed using recombinant DNA technology.

(3) Exemptions given in the JAS interim measures and the Q&A

Despite previous sections, exemptions given in the JAS interim measures and the Q&A have to be followed.

[Interim measures]

- Substances derived from plants and their residue.
- Substances derived from fermented, dried, or burned excrement.
- Substances derived from plant or animal products from food and textile industries.
- Substances derived from fermented food waste.

(Conditions)

In the production processes of raw materials, it is difficult to obtain substances produced without recombinant DNA technology.

[Examples of these exemptions]

- Oil cakes (soy beans, corns, rapeseed, and cottonseed)
- Substances produced using livestock excrement, in which other excrement of livestock given genetic recombined feed are rolled off.
- By-products of food (okara or soybean curd refuse, soybean scraps in screening, and others)
- Ethanol used for extraction (When it is derived from corns, it is not needed to be confirmed whether or not the corns are genetically recombined).

(4) Others

a. Media of microorganisms

When most media of microorganisms (yeasts, enzymes, and fungi for fermentation) remain in the substances of the final products, the media may not be genetically recombined. Chemically synthesized substances may not be used in the media. There is no restriction on media which do not remain in the substances of end products, such as media for initial inoculum incubation.

1.5. Special instructions for listing substances

In future, compliance for listing substances in the projects of listing substances shall be judged based on not only the instructions mentioned above but also the following instructions:

1.5.1. Agreements with information providers

When information is obtained by producers of substances, gaining agreements with the producers on implementation of site inspections is necessary.

1.5.2. Possibility of confirmation through site inspections

Compliance is generally judged by documentary examinations and, if necessary, by evaluations through site inspections.

1.5.3. Precautions against risks posed by contamination at production sites of substances

Risks posed by contamination in production processes of fertilizers are evaluated based on the documents on substance information submitted by producers. In these document examinations, it is confirmed that 1) substances in non-compliance with the Organic JAS are produced in the same production lines as such substances, and that 2) preventive measures of invasion of substances at the switching production lines and others.

Especially, when substances are produced in the same production lines as the substances containing components of agricultural chemicals, documents assuring that contamination is completely removed have to be obtained from substance producers.

2. Individual procedures for judging substances listed the Appendix 1

2.1. Substances derived from plants and their residue

Substance category		Substances derived from plants and their residue
Standards	Main standards	<ul style="list-style-type: none"> - Chemically synthesized substances are not added in production processes. - Recombinant DNA technology is not used in the production of raw materials.
	Standards listed in the Appendix 1	None.
Confirmation procedures and points to be noted in confirmation		<p>1) Substances targeted in this section are plants and their residue. As for processed substances such as pyroligneous acid and plant extracts, see the section of “Other fertilizers and soil improvement substances.”</p> <p>2) Without the origin indicated in the “standards of Appendix 1,” the production of raw materials (production processes of plants) is not restricted. For example, cultivated plants used as raw materials can be cultivated by conventional farming methods.</p> <p>3) Chemical treatment and addition of chemical substances to such plants are not permitted from logging, harvest, picking, or reaping for introduction into fields.</p> <p>E.g., Woodchips derived from construction-wood waste are not permitted unless it is proved that they are not treated with chemical substances.</p> <p>4) Use of recombinant DNA technology in this section is not assessed, subject to the interim measures, “in the production processes of raw materials, it is difficult to obtain substances produced without recombinant DNA technology,” as described in the section of judgment standards.</p>
Soy bean scraps		Recombinant DNA technology is not required to be confirmed if such substances are derived from domestic soybeans because their genetically modified seeds are not distributed.
Waste-mushroom beds		<p>Waste-mushroom beds are described in this section for convenience, although they are sometimes mixed with substances other than waste-mushroom beds in the production process of mushroom beds.</p> <p>Use of waste-mushroom beds is determined based on confirmation of the following information:</p>

	<ul style="list-style-type: none"> - Whether sawdusts and chips are satisfied with the standards in this section (substances derived from plants). - Whether waste-mushroom beds have been sterilized using chemically synthesized substances and agents while being used as mushroom beds. (Generally, media is steam-sterilized. The mushroom beds of Pleurotus have to be confirmed because certain bactericidal agents are registered for the media cultivation of Pleurotus.) - Are nutrient agents used in the substances listed in the Appendix 1?
Waste-mushroom bed logs	<p>For use of waste-bed logs of log cultivation of mushroom, the bed logs have to satisfy this section (substances derived from plants).</p> <p>Bed logs may be immersed in water containing urea, ammonium sulfate, and other substances in order to promote cultivation of mushrooms. This activity is considered as an operation during cultivation, and therefore, is not restricted.</p> <p>Plastics used for sealing wax at the inoculation have to be removed.</p>
Direction for revision of the JAS	<p>In the standards in this section, it has been considered whether or not some restrictions, including elimination of those which are derived from construction-wood waste, adhesive materials, and chemical treatment agents, are placed for sawdusts and chips.</p>

2.2. Substances derived from fermented, dried, or burned excrement

Substance category		Substances derived from fermented, dried, or burned excrement
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in the Appendix 1	Substances have to be derived from excrement of livestock and poultry.
Confirmation procedures and points to be noted in confirmation		<p>1) Description of “standards listed in the Appendix 1” means that substances derived from human excrement are banned (See the Q&A).</p> <p>2) In the processes of collection, transport, fermentation, drying, burning, and others, addition of chemical substances is not permitted. When excrement is externally introduced, livestock farmers are confirmed that they do not use aggregation accelerators or pesticides, or that they do not use construction-wood waste as litter.</p> <p>3) Handling of litter As for litter collected with excrement, it is confirmed only that the raw materials of the litter are not derived from construction-wood waste.</p> <p>4) Feed of livestock and poultry The following is not confirmed: cultivation methods of pasture plants and raw materials of concentrated feed, with or without gene recombination, antibiotics, synthesized antibacterial agents, feed additives, and others.</p> <p>5) Treatment by production process managers When production process managers introduce external livestock excrement and then add wood, it is confirmed that the wood has not been chemically treated. Sawdusts and lumber waste derived from construction-wood waste are not permitted.</p> <p>6) Use of recombinant DNA technology in this section is not assessed, subject to the interim measures, “in the production processes of raw materials, it is difficult to obtain substances produced without recombinant DNA technology,” as described in the section of judgment standards.</p> <p>7) Livestock excrement fermented at constant temperature and composted is recommended, in order to kill zoonotic pathogens and weed seeds. Raw excreta are judged to be in non-compliance in this section because they</p>

	have not been fermented, dried, or burned. Excreta, which are dried to a certain extent, are considered to be allowed even if they are being fermented.
Processed poultry manure (registered as manure)	Poultry manure, which is mixed with sulfate and others and heat-dried, is in non-compliance.
Microorganisms (used for promoting fermentation of manure and others)	When most media of microorganisms remain in the substances of the final products, the media have not to be genetically recombined. Chemically synthesized substances may not be used in the media. There is no restriction on media which do not remain in the substances of end products, such as media for initial inoculum incubation.

2.3. Substances derived from plant or animal products from food and textile industries

Substance category		Substances derived from plant or animal products from food and textile industries
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in the Appendix 1	These substances have to be derived from natural substances or natural substances without chemical treatment (oil extraction with organic solvents is excluded).
Confirmation procedures and points to be noted in confirmation		<p>1) Based on the above origin standards, information including production processes of raw materials is obtained, and confirmation is performed.</p> <p>2) According to the above exemptions, oil cake is permitted to be used even if the extraction process is a chemical treatment process.</p> <p>3) Use of recombinant DNA technology in this section is not assessed, subject to the interim measures, “in the production processes of raw materials, it is difficult to obtain substances produced without recombinant DNA technology,” as described in the section of judgment standards.</p>
Ethanol (food)		Chemical treatment or genetic recombination technology may not be used in the production processes of ethanol. Genetic recombination of raw materials is not required to be confirmed (interim measures are applied).
Distilled spirits (food)		<p>1) Production processes</p> <p>Only distilled spirits obtained by brewing are in compliance.</p> <p>2) Used of fermentation aids</p>

	<p>Distilled spirits for which fermentation aids are used in the production processes are not permitted.</p> <p>3) Genetic recombination of raw materials</p> <p>Chemical treatment or genetic recombination technology may not be used in the production processes of distilled spirits like ethanol. Genetic recombination of raw materials is not required to be confirmed (interim measures are applied).</p>
Distilled spirit waste and fermented slop	Substances with chemical substances added as a fermentation accelerator are not permitted.
Corn immersion solution (corn steep liquor)	Corns, which are immersed in sulfite solution, fermented, and concentrated for producing cornstarch, are in non-compliance.
Cornstarch (non-fermented)	Compliance: If it is confirmed that a process of sulfite dilution is not included in the production processes.
Burned corn ash (non-fermented)	Compliance: If it is confirmed that a process of sulfite dilution is not included in the production processes.
Feather meal from food factories	Non-compliance: If it is confirmed that acid treatment is included in the production processes.
Lime-treated fertilizers (special fertilizers)	Substances, such as the mix of distilled spirit waste and quick lime, are permitted. (They correspond to lime-treated fertilizers out of special fertilizers.)
Fertilizers of dried fungal bodies	Non-compliance: If aggregating agents are used.
Okara or soybean curd refuse (non-fermented)	<p>Based on interim measures, it is not assessed whether genetic recombination technology is used for soybeans and raw materials of okara.</p> <p>When a deforming agent is used in a tofu factory, the process is regarded as addition of chemical substances. Therefore, use of raw okara is in non-compliance with the current standards. Okara has to be fermented.</p> <p>Notice: For okara (fermented), see “5. Substances derived from fermented food waste.”</p>
Imported wheat and bran	Although there is a possibility that imported wheat and bran is subjected to postharvest treatment, confirmation is not required because of difficulties in investigations.
Brown sugar	Brown sugar is evaluated in this section or the section of “Substances

	derived from fermented food waste” when it corresponds to food waste and is fermented for use.
Molasses	Molasses is evaluated in this section or the section of “Substances derived from fermented food waste” when it corresponds to food waste and is fermented for use.
Glucose	Glucose is evaluated in this section or the section of “Substances derived from fermented food waste” when it corresponds to food waste and is fermented for use.
Substances from textile factories	Chemical treatment in textile factories is not permitted.
Direction for revision of the JAS	At present, oil extraction with organic solvents is permitted as an exemption of chemical treatment, and use of processing aids is also being considered to be permitted as an exemption.

2.4. Substances derived from plant or animal products from slaughterhouses or fish-processing facilities

Substance category	Substances derived from plant or animal products from slaughterhouses or fish-processing facilities	
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in the Appendix 1	These substances have to be derived from natural substances or natural substances without chemical treatment.
Confirmation procedures and points to be noted in confirmation	<p>1) Based on the above origin standards, information including production processes of raw materials is obtained and confirmation is performed.</p> <p>2) Mostly, raw materials of mixed fertilizers applied to this section are used. Then, the status of raw materials of the respective mixed fertilizers has to be investigated and evaluated.</p>	
Bone meal	<p>Although there is a possibility that imported steamed bone meal is fumigated at the time of import, fumigation of imported bone meal is not regarded as a problem (Excerpted from “Organic JAS for Beginners” by the Ministry of Agriculture, Forestry and Fisheries).</p> <p>A written certificate is confirmed, in order to confirm whether bone meal has been properly treated in relation to BSE.</p>	
Steamed leather meal	All steamed leather meal is in non-compliance.	

	(Because it is always chemically treated at advance, even physical tanning.)
Fish waste processed fertilizers	Fish waste absorbed in peat and other absorbing raw materials is in compliance only if it is used for fertilizers. (However, it has to be confirmed that peat is not chemically treated.) Fish waste absorbed in rice bran is in compliance.
Animal by-product fertilizers	Animal by-product fertilizers derived from tanned leather industry are in non-compliance.
Fish flour, fish less, and fish soluble	When fish less powder is used, confirm whether it is for fertilizers or feed. - For feed, the case when chemically synthesized substances as antioxidants (e.g., ethoxyquin) are mixed is in non-compliance. - For fertilizer, copies of registration certificates of fertilizers are confirmed. - It is confirmed that foreign fish soluble is not treated with agents such as alkali in the extraction process. (Note: The NOP approves use of agents such as alkali unlike the JAS.)
Dried blood (blood meal)	Dried blood in whose production processes aggregating agents are used and that are treated with acid or alkali are in non-compliance.
Animal waste meal and others	It is confirmed whether dried blood and its meal and steamed leather meal are used in raw materials. Then the substances are evaluated according to the abovementioned sections.

2.5. Substances derived from fermented food waste

Substance category		Substances derived from fermented food waste
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in the Appendix 1	These substances other than food waste must not enter into such substances.
Confirmation procedures and points to be noted in confirmation		1) This section might be originally prepared for manure using food residues, such as raw garbage compost, and however, food waste from food factories is also evaluated in this section if the waste is fermented. 2) It is confirmed by a production-process chart whether food waste is included in the raw materials used in the processes based on the above standards. 3) Once food is discarded, the food is regarded as food waste, and

	<p>therefore, it can be evaluated in this section.</p> <p>4) Because there are no processes for raw materials, production processes of raw materials are not required to be confirmed.</p> <p>5) Use of recombinant DNA technology is not assessed, subject to the interim measures, “in the production processes of raw materials, it is difficult to obtain substances produced without recombinant DNA technology,” as described in the section of judgment standards.</p>
Cornstarch (fermented)	If cornstarch is used as a raw material of substances to be fermented, it is evaluated for compliance in this section.
Okara or soybean curd refuse (fermented)	<p>If okara is fermented for use, it is included in this section. Therefore, production processes of raw materials and use of deforming agents do not need to be confirmed. Based on interim measures, it is not assessed whether genetic recombination technology is used for soybeans and raw materials of okara.</p> <p>Note: For okara (non-fermented), see “2.3. Substances derived from plant or animal products from food and textile industries.”</p>
Direction for revision of the JAS	At present, use of food waste, which is fermented and composted, is evaluated in this section. It is being considered whether direct introduction of non-fermented food into fields is permitted.

2.6. Bark compost

Substance category		Bark compost
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in the Appendix 1	Bark compost has to be derived from natural substances or natural substances without chemical treatment.
Confirmation procedures and points to be noted in confirmation		<p>1) When the raw materials of bark compost are chemically treated after logging, it is in non-compliance.</p> <p>2) If urea and ammonium sulfate are used as mature accelerating agents in its production processes, the bark compost is in non-compliance. If poultry manure, cattle feces, and others are used as maturing accelerators, further confirmation on the origin is not required.</p>

2.7. Guano

Substance category		Guano
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in the Appendix 1	None.
Confirmation procedures and points to be noted in confirmation		1) There are no specific additional standards. A production-process chart of such substances is obtained and evaluated based on the judgment standards.

2.8. Dried algae and their powder

Substance category		Dried algae and their powder
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in the Appendix 1	None.
Confirmation procedures and points to be noted in confirmation		1) There are no specific additional standards. A production-process chart of such substances is obtained and evaluated based on the judgment standards. 2) If such substances are treated with acid or alkali, they are in non-compliance. (Note: As for this section, judgment might be controversial rigorously considering the difference between addition and treatment (See Page 3). However, such a judgment was made in the past.)

2.9. Plant and wood ashes

Substance category		Plant and wood ashes
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	These substances have to be derived from natural substances or natural substances without chemical treatment.
Confirmation procedures and points to be noted in confirmation		1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed. 2) The origins of plants and wood used as raw materials and substances used in the growing process are not required to be considered, subject to that banned substances are not used for such plants and wood after harvest or logging.

2.10. Calcium carbonate

Substance category		Calcium carbonate
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Calcium carbonate has to be derived from natural substances or natural substances without chemical treatment (including magnesium calcium carbonate).
Confirmation procedures and points to be noted in confirmation		1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed. 2) Production processes with or without granulating agents are confirmed. (Granulating agents are confirmed when a granulation process is included in the production process.)

2.11. Potassium chloride

Substance category		Potassium chloride
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Potassium chloride has to be from natural ores, which are crushed or water-washed, refined, and derived from natural brine.
Confirmation procedures and points to be noted in confirmation		1) Based on the above standard, it is confirmed that raw materials and production processes meet the standards.

2.12. Potassium sulfate

Substance category		Potassium sulfate
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Potassium sulfate has to be derived from natural substances or natural substances without chemical treatment.
Confirmation procedures and points to be noted in confirmation		1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed.

2.13. Potassium magnesium sulfate

Substance category		Potassium magnesium sulfate
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Potassium magnesium sulfate has to be derived from natural ores, which are water-washed and refined.

Confirmation procedures and points to be noted in confirmation	1) Information of production processes showing that the substances are derived from natural ores is confirmed. Also, it is confirmed that natural mineral forms of potassium magnesium sulfate are refined.
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2.14. Natural phosphate rock

Substance category		Natural phosphate rock
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Cadmium contained in natural phosphate rock has to be 90 mg/kg or lower (converted to phosphorus pentoxide).
Confirmation procedures and points to be noted in confirmation		1) According to the above standards, the content of cadmium described in the information document is confirmed.

2.15. Magnesium sulfate

Substance category		Magnesium sulfate
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Magnesium sulfate has to be derived from natural substances or natural substances without chemical treatment.
Confirmation procedures and points to be noted in confirmation		<p>1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed.</p> <p>2) As a raw material derived from natural ores, kieserite is permitted because the electrostatic separation used in the separation and refinement processes of kieserite is regarded as a physical method. (Electrostatic separation is not regarded as direct electrolysis.)</p> <p>3) As for raw materials derived from seawater, two judgments have been made: they are permitted because bromine substitution process is not regarded as a chemical treatment and vice versa. (This is not discussed in this fiscal year but will be done in the next fiscal year.)</p>

2.16. Magnesium hydroxide

Substance category		Magnesium hydroxide
Standards	Main standards	Same as above (Description is omitted).

	Standards listed in Appendix 1	Magnesium hydroxide has to be derived from crushed natural ores.
Confirmation procedures and points to be noted in confirmation		1) Information of production processes showing that the substances are derived from natural ores is confirmed.

2.17. Gypsum (calcium sulfate)

Substance category		Gypsum (calcium sulfate)
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Gypsum (calcium sulfate) has to be derived from natural substances or natural substances without chemical treatment.
Confirmation procedures and points to be noted in confirmation		1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed.

2.18. Sulfur

Substance category		Sulfur
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	None.
Confirmation procedures and points to be noted in confirmation		1) Sulfur is permitted even if it is chemically synthesized according to the Notice No. 1005. 2) There are no specific additional standards. A production-process chart of such substances is obtained and evaluated based on the judgment standards.

2.19. Quicklime (including magnesium quicklime)

Substance category		Quicklime (including magnesium quicklime)
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Quicklime (including magnesium quicklime) has to be derived from natural substances or natural substances without chemical treatment.
Confirmation procedures and points to be noted in confirmation		1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed.

2.20. Slaked lime

Substance category		Slaked lime
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Slaked lime has to be derived from the quicklime mentioned above. (Note: Quicklime has to be derived from natural substances or natural substances without chemical treatment.)
Confirmation procedures and points to be noted in confirmation		<p>1) Sulfur is permitted even if it is chemically synthesized according to the Notice No. 1005.</p> <p>2) It is judged whether it meets the above standards based on the information of production processes of slaked lime and its raw materials.</p>

2.21. Microelements (manganese, boron, iron, copper, zinc, molybdenum, and chlorine)

Substance category		Microelements (manganese, boron, iron, copper, zinc, molybdenum, and chlorine)
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	These substances have to be used when plants cannot grow normally because of lack of microelements.
Confirmation procedures and points to be noted in confirmation		<p>1) Sulfur is permitted even if it is chemically synthesized according to the Notice No. 1005. Substances themselves are not used in the form of simple substances but in other forms, such as zinc sulfate.</p> <p>2) Because the above additional standards are not for judging compliance of information but for cultivation management, they are confirmed along with the management methods by production process managers.</p>

2.22. Crushed rocks

Substance category		Crushed rocks
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Crushed rocks have to be derived from natural substances or natural substances without chemical treatment, and they may not contain hazardous heavy metals and other hazardous substances causing soil contamination and other pollution.
Confirmation procedures and points to be noted in		1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed.

confirmation	2) The latter part of the above standards, “they may not contain hazardous heavy metals...” is confirmed based on explanatory documents obtained from manufacturers of the substances. (Inspections of heavy metals are not uniformly required.)
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2.23. Charcoal

Substance category		Charcoal
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Charcoal has to be derived from natural substances or natural substances without chemical treatment.
Confirmation procedures and points to be noted in confirmation		<p>1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed.</p> <p>2) Substances used in the growing process of trees to be used as raw materials are not required to be considered, making it a condition that such plants and trees are treated without banned substances after harvest and cutting down. Charcoal made from chemically treated construction-wood waste is in non-compliance.</p> <p>3) Homemade charcoal is equally evaluated.</p>

2.24. Peat

Substance category		Peat
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Peat has to be derived from natural substances or natural substances without chemical treatment. However, its use as a soil improvement agent is restricted to propagation soil.
Confirmation procedures and points to be noted in confirmation		<p>1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed.</p> <p>2) The latter part of the above means restriction of the objective. This restriction is provided in CODEX, considering depletion of natural resources. The standards are interpreted that the use of peat as a soil improvement agent is restricted to propagation soil, and however, the use as fertilizers is not restricted. Because the restriction of objective is not for judging compliance of information but for cultivation management, they are confirmed along with the management methods by production process managers.</p> <p>- Judgment is made after confirming the objective with production</p>

	<p>process managers.</p> <ul style="list-style-type: none"> - Use of peat in fields for soil improvement is not permitted. It can be used in raising seedlings. - It can be used as a raw material of fertilizers (e.g., raw materials of Bokashi fertilizers). - When peat moss is used only in planting holes of blueberries and this application is regarded as raising seedling, it is in compliance.
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2.25. Bentonite, perlite, zeolite, vermiculite, and baked particles of diatomaceous earth

Substance category		Bentonite, perlite, zeolite, vermiculite, and baked particles of diatomaceous earth
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	These substances have to be derived from natural substances or natural substances without chemical treatment.
Confirmation procedures and points to be noted in confirmation		<ol style="list-style-type: none"> 1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed. 2) At present, most cases show the origins of natural substances and no chemical treatment.

2.26. Basic slag

Substance category		Basic slag
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	None.
Confirmation procedures and points to be noted in confirmation		<ol style="list-style-type: none"> 1) There are no specific additional standards. A production-process chart of such substances is obtained and evaluated based on the judgment standards. 2) The target in this section is not domestic basic slag but Thomas phosphatic fertilizer, which is not produced in Japan.

2.27. Slag silicate fertilizers

Substance category		Slag silicate fertilizers
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Slag silicate fertilizers have to be derived from natural substances or natural substances without chemical treatment.

Confirmation procedures and points to be noted in confirmation	1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed.
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2.28. Fused magnesium phosphate

Substance category		Fused magnesium phosphate
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Fused magnesium phosphate has to be derived from natural substances or natural substances without chemical treatment and has to contain cadmium of 90 mg/kg or lower (converted to phosphorus pentoxide).
Confirmation procedures and points to be noted in confirmation		1) According to the above origin standards, information including production processes of raw materials is obtained and confirmed. Forming processes of powdery, sandy, and particulate forms are required to be confirmed. 2) Explanatory documents proving the standard in the latter part of the above are obtained.

2.29. Sodium chloride

Substance category		Sodium chloride
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Sodium chloride has to be produced or extracted from seawater or lake water without using chemical methods.
Confirmation procedures and points to be noted in confirmation		1) Confirmation is performed based on information of production processes showing the above.

2.30. Aluminum calcium phosphate

Substance category		Aluminum calcium phosphate
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	Cadmium contained in aluminum calcium phosphate has to be 90 mg/kg or lower (converted to phosphorus pentoxide).
Confirmation procedures and points to be noted in confirmation		1) Aluminum calcium phosphate is permitted even if it is chemically synthesized, according to the Notice No. 1005. 2) There are no specific additional standards. A production-process chart of such substances is obtained and evaluated based on the

	judgment standards. 3) Explanatory documents demonstrating the above standard of cadmium are obtained.
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2.31. Calcium chloride

Substance category		Calcium chloride
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	None.
Confirmation procedures and points to be noted in confirmation		1) Calcium chloride is permitted even if it is chemically synthesized according to the Notice No. 1005. 2) There are no specific additional standards. A production-process chart of such substances is obtained and evaluated based on the judgment standards.

2.32. Vinegar

Substance category		Vinegar
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	None.
Confirmation procedures and points to be noted in confirmation		1) The Notice No. 1005 permits the use of chemically synthesized vinegar, and therefore, the use of synthesized vinegar is permitted. 2) A production-process chart of such substances is obtained and evaluated based on the judgment standards. 3) As for genetic recombination, when raw materials correspond to raw material plants that require confirmation of genetic recombination (See 1.4.2 (1), page 13), it is confirmed whether they are not genetically modified. Rice, the raw material of rice vinegar, is not required to be confirmed, judging from current state of approval for genetic modification in Japan.

2.33. Lactic acid

Substance category		Lactic acid
Standards	Main standards	Same as above (Description is omitted).

	Standards listed in Appendix 1	Lactic acid is restricted to those whose raw materials are plants and which are fermented only in order to be used for pH control of propagation medium and others.
Confirmation procedures and points to be noted in confirmation		<p>1) Information showing that raw materials are plants and that fermentation process is used is confirmed.</p> <p>2) A restriction of objective is stated in the latter part of Appendix 1 standards. The restriction of objective is not for judging compliance of information but for cultivation management. It will be confirmed along with the management methods by production process managers.</p> <p>3) For confirming that the origins of raw materials of plants show that genetic recombination might have been used for the raw materials, the plants require to be managed separately.</p>

2.34. By-products of sugar manufacturing industry

Substance category		By-products of sugar manufacturing industry
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	None.
Confirmation procedures and points to be noted in confirmation		<p>1) By-products of sugar manufacturing industry are blackstrap molasses, bagasse, and others, and include blackstrap molasses used for cultivation of yeasts.</p> <p>2) Because no standards of origins of raw materials are provided, concerning the by-products of sugar manufacturing industry, chemical treatment in the manufacturing process of sugar is not restricted. The processes after the collection of the by-products to the substances are judged according to the main standards.</p> <p>3) Molasses are not by-products but main products, and therefore, are not applied to this section. Sugar manufacturing processes have to be confirmed for molasses. However, they can be used as substances derived from fermented food waste or as raw materials of manure (including Bokashi fertilizers).</p>
Molasses		Molasses is not judged in this section but in the section, “substances derived from food industry,” and fermented molasses waste is judged in the section, “substances derived from food waste.”

Brown sugar	Brown sugar is not judged in this section but is judged in the section, “substances derived from food industry,” and fermented waste brown sugar is judged in the section, “substances derived from food waste.”
Glucose	Glucose is not judged in this section but in the section, “substances derived from food industry,” and fermented waste glucose is judged in the section, “substances derived from food waste.”

2.35. Granulating and anti-caking agents of fertilizers

Substance category		Granulating and anti-caking agents of fertilizers
Standards	Main standards	Same as above (Description is omitted).
	Standards listed in Appendix 1	These agents have to be derived from natural substances or natural substances without chemical treatment. However, if granulating and anti-caking agents of fertilizers cannot be produced from such natural substances, only lignin sulfonate can be used.
Confirmation procedures and points to be noted in confirmation		<ol style="list-style-type: none"> 1) These substances are not used as a single substance. 2) When producers produce fertilizers by themselves, judgment is done based on the above. The standards are generally applied when a granulation process or addition of anti-caking agents is included in the production process of fertilizers. 3) The condition of “These agents have to be derived from natural substances or natural substances without chemical treatment” is provided in the former part of the above standards, and therefore, substances derived from natural substances can be used as granulating and anti-caking agents of fertilizers. 4) The description in the latter part of the above standards in Appendix 1 is an exemption only when natural substances are not available. In this case, the reasons will be confirmed with the manufacturer. 5) Notice No. 1005 states that lignin sulfonate is permitted to be chemically synthesized.

2.36. Other fertilizers and soil improvement agents

Substance category		Other fertilizers and soil improvement agents
Standards	Main standards	Same as above (Description is omitted).

	Standards listed in Appendix 1	<p>1) Purpose and methods of use</p> <ul style="list-style-type: none"> - For plant nutrients or soil improvement, such substances are administered to soil (including organisms). - For plant nutrients, such substances are administered to plants (including organisms). <p>2) Origins of raw materials</p> <p>These substances have to be derived from natural substances or natural substances without chemical treatment (only those that are produced by combustion, burning, melting, dry distillation, or saponification, and those which are not produced by chemical methods and by using recombinant DNA technology).</p> <p>3) Effects not permitted</p> <p>Such substances have to show no obvious pest control effects.</p> <p>4) Conditions of use</p> <p>Such substances can be used only when productivity of field based on soil properties cannot be maintained and improved by other substances listed in Appendix.</p>
Confirmation procedures and points to be noted in confirmation		<p>When substances are regarded as “other substances” in this category, the following procedures are implemented:</p> <p>1) As with other substances, origins of raw materials and production processes of fertilizers are confirmed and then judged based on the same standards as other substances.</p> <p>2) “Combustion, burning, melting, dry distillation, or saponification” described in the above 2) of the standards listed in Appendix 1 are chemical reactions. These reactions are permitted in the evaluation of “other substances.”</p> <p>3) The above 3) of the standards listed in Appendix 1 means that such substances are not regarded as agricultural chemicals. Therefore, registered agricultural chemicals and selected pesticides may not be used in Appendix 1. The substances, whose applications as selected pesticides are under discussion, can be included in this section in terms of “it is still not clear that they have pest control effects.”</p> <p>4) The above 1) and 4) of the standards listed in Appendix 1 are standards not for judging compliance of information but for cultivation management, and therefore, they are confirmed along</p>

	<p>with the management methods by production process managers.</p> <p>5) It is confirmed whether or not recombinant DNA technology is used in the production of raw materials.</p>
Plant extracts	<p>1) Raw materials and production processes</p> <p>The followings is confirmed:</p> <ul style="list-style-type: none"> - Name of the raw material. - Origin of the raw material. - Name and address of the factory producing undiluted solution. - It is confirmed whether the factory produces other agricultural chemicals in parallel, and if it does, whether appropriate contamination control measures are taken. - It is confirmed whether pesticide residue test used in the country, in which the factory of raw materials is located has been performed (Submission of an analysis report). <p>2) Extraction methods</p> <p>Solvent to be used for extraction is confirmed. Only extractions using water, pyroligneous acid, and others, and fermented and brewed ethanol are permitted. Unknown solvent shall be regarded as non-compliance.</p> <p>3) Others</p> <p>Plant extracts with fish toxicity are attached with the conditions requiring precautions in the use.</p>
Ethanol (used for extraction)	<p>Ethanol intended for food use has to be used, and chemical treatment and genetic recombination technology should not have been used in the production processes.</p> <p>Whether raw materials are genetically modified is confirmed.</p> <p>Note: As for “Ethanol (food),” see the “2.3. Substances derived from plant or animal products from food and textile industries.”</p>
Distilled spirits	<p>1) Production processes</p> <p>Only brewed distilled spirits are permitted.</p> <p>2) Use of fermentation aids</p> <p>Distilled spirits produced using fermentation aids are not permitted. It is confirmed whether glucose is added in order to increase recovery rate of alcohol. Chemically treated glucose is not permitted.</p> <p>3) Genetic recombination of raw materials</p>

	<p>Chemical treatment and genetic recombinant technology may not be used in the production processes of distilled spirits. It is also confirmed whether or not genetically modified raw materials are used.</p> <p>Note: As for distilled spirits (food), see the “2.3. Substances derived from plant or animal products from food and textile industries.”</p>
<p>Enzymes added as raw materials</p>	<p>Enzymes meeting conditions of substances in this section are regarded as being in compliance.</p> <p>(Note: Most products whose trade names are “XXX Enzyme” do not strictly apply to the category of enzymes, but to other categories such as microbial substances.)</p>
<p>Microbial substances (administered directly to fields and plants)</p>	<p>When most microbial media remain in the substances of end products, they are required not to be genetically modified, and chemically synthesized substances may not be used as the media. However, when media do not remain in the substances of end products, such as media for initial inoculum incubation, the media is not restricted.</p>

II. Agricultural chemicals (Appendix 2)

3. Standards of judging compliance of substances in Appendix 2

3.1. Premises to the use of substances in Appendix 2

For use of substances corresponding to Appendix 2, the following conditions described in the main standards have to be complied with, as is the case with Appendix 1 for cultivation management.

Article 4 of the JAS: Control of noxious animals and plants

Noxious animals and plants in fields have to be effectively controlled only by cultural (details of the procedures are skipped), physical (details of the procedures are skipped), and biological control procedures (details of the procedures are skipped), or their combination. Only agricultural chemicals listed in Appendix 2 (excluding substances produced using recombinant DNA technology; same as above) may be used in the cases when there is immediate and significant danger to crops and as well as when noxious animals and plants in fields cannot be effectively controlled by cultural, physical, and biological control procedures, or their combination.

The following sections 3.2 and 3.3 are described as the judging standards of control substances used due to unavoidable reasons.

3.2. Evaluation in use of control substances listed in Appendix 2

(1) Principle

The list of Appendix 2 is described according to the Agricultural Chemicals Regulation Act. The only substances described in the standard section are attached with conditions, which are shown in the right-hand column of standards. The other substances with no conditions in the column are registered agricultural chemicals. If target plants of substances are listed as applicable plants, the substances can be used.

In general, register numbers of agricultural chemicals are checked in a pamphlet, etc., and if the categories of the substances are listed in Appendix 2, they can be used.

(2) Substances with conditions listed in the standard column

As for the following agricultural chemicals, standards for use are listed in the right-hand column of Appendix 2.

	Agricultural chemicals	Standards
1	Pyrethrum and pyrethrin emulsions	Only those which are extracted from pyrethrum and do not contain piperonyl butoxide as a synergist.
2	Metaldehyde granule	Only for use in insect traps.
3	Copper sulfate	Only for use in preparation of Bordeaux mixture.
4	Quicklime	Only for use in preparation of Bordeaux mixture.
5	Sex pheromone substance	Only those whose active ingredients are substances having pest insect pheromone action.
6	Spreader	Only those whose active ingredients are casein or paraffin.
7	Carbon dioxide fumigant	Only for use in storage facilities.
8	Diatomaceous earth powder	Only for use in storage facilities.

(a) Sex pheromone substance (#5) and spreader (#6)

The conditions of these substances are on active ingredients. Judging compliance of these substances is available by confirming active ingredients mentioned on the label of the agricultural chemicals.

(b) Pyrethrum and pyrethrin emulsions (#1)

As for the condition of these substances, raw materials are required to be confirmed. Therefore, the documents stating that the raw materials are in compliance with the standards have to be obtained for confirmation.

(c) Metaldehyde granule (#2), copper sulfate (#3), and quicklime (#4)

The conditions of these substances are not on ingredients of the products but on how to use. The substances are not specifically required to be considered in the evaluation. Use of such substances has to be cautioned.

(d) Carbon dioxide fumigant (#7) and diatomaceous earth powder (#8)

See the section 3.4 described below.

(3) Biopesticide formulations

Although the above main standards state “excluding substances produced using recombinant DNA technology,” “biopesticide formulations” listed in Appendix 2 are possible to be produced using recombinant DNA technology.

The biopesticide formulations available are however listed in the Q&A No. 105, and the following biopesticides shall be able to be used and are not particularly required to be confirmed (as of March 2010):

- *Bacillus thuringiensis* (wetable powder or granular formulation) (irrespective of dead or alive)
- *Beauveria brongniartii* agent
- *Verticillium lecanii* wettable powder
- *Paecilomyces fumosoroseus* wettable powder
- *Beauveria bassiana* emulsion
- *Steinernema carpocapsae* agent
- *Sternernema glaseri* agent
- *Monacrosporium phymatopagum* agent
- *Pasteuria penetrans* wettable powder
- *Phytoseiulus persimilis* agent
- *Amblyseius cucumeris* agent
- *Amblyseius californicus* agent
- *Aphidius colemani* agent
- *Eretmocerus eremicus* agent
- *Encarsia formosa* agent
- *Diglyphus isaea* agent
- *Dacnusa sibirica* agent
- *Diglyphus isaea* and *Dacnusa sibirica* agent
- *Neochrysocharis formosa* agent
- *Franklinothrips vespiformis* agent
- *Aphidoletes aphidimyza* agent
- *Orius strigicollis* agent
- *Harmonia axyridis* agent
- *Orius sauteri* agent
- *Chrysoperla carnea* agent
- *Homona magnanima granulosis* virus and *Adoxophyes orana fasciata granulosis* virus wettable powder
- *Zucchini yellow mosaic* virus less virulent strain's wettable powder
- *Talaromyces flavus* wettable powder
- *Trichoderma atroviride* wettable powder
- *Agrobacterium radiobacter* strain 84 agent
- Apathogenic *Erwinia carotovora* wettable powder
- *Pseudomonas fluorescens* agent

- *Pseudomonas CAB-02* wettable powder
- *Bacillus subtilis* wettable powder
- *Xanthomonas campestris* liquid
- *Drechslera monoceras* agent
- *Spodoptera litura nucleopolyhedrovirus* wettable powder
- *Coniothyrium minitans* wettable powder
- *Eretmocerus mundus* agent
- *Variovorax paradoxus* wettable powder
- *Paecilomyces tenuipes* emulsion
- *Amblyseius swirskii* agent
- *Bacillus simplex* wettable powder
- *Aphelinus asychis* agent

(4) Applicable plants of registered agricultural chemicals

As for applicable plants of registered agricultural chemicals, it has to be required whether target plants are included in the applicable plants. It is noted that the detailed categories of applicable plants are shown in the website of the Food and Agricultural Materials Inspection Center as below:

- Names of applicable plants in registration of agricultural chemicals.

<http://www.acis.famic.go.jp/shinsei/sakumotuhyou.htm>

- Appendix 1 on the operation of “Japan’s new test guidelines for supporting registration of chemical pesticides.”

<http://www.acis.famic.go.jp/shinsei/3986/3986.pdf>

3.3. Specific control substances

(1) Specific control substances

Only three substances are currently approved as specific control substances: regional natural enemies, sodium bicarbonate, and vinegar.

“Regional natural enemies” correspond to biological control provided in the JAS main standards, and therefore, they are in compliance with the standards and can be used without restriction.

“Sodium bicarbonate” and “vinegar” are listed in Appendix 2, and they have no specific standards.

Therefore, any vinegar can be used, even if it is synthesized. (However, “mixed vinegar,” a mixture of vinegar and other ingredients, does not correspond to “vinegar.”)

(2) Substances under evaluation of specific control substances

In the Organic JAS, substances under evaluation of specific control substances (e.g., pyroligneous acid) cannot be used for pest control. Use for the purpose of another effect is judged based on “other fertilizers and soil improvement agents” (hereinafter referred to as “other substances”) listed in Appendix 1.

The standard in *other substances* listed in Appendix 1, “Such substances have to show no obvious pest control effects,” can be interpreted as that agricultural chemicals may not be used in Appendix 1, but substances under evaluation of specific control substances can be evaluated as those in Appendix 1 because their pest control effects have not been officially approved.

3.4. Use of agents for the purpose of pest control in post-harvest facilities

(1) Description of the JAS

Article 4 of the JAS provides as follows:

2. Control of noxious animals and plants or maintenance and improvement of quality have to be conducted using physical and biological functions (excluding recombinant DNA technology; same as above). However, if physical and biological control procedures do not provide sufficient effects, only the following substances may be used:

(1) Purpose of control of noxious animals and plants: Agricultural chemicals listed in Appendix 2 of the JAS of organic plants and chemical agents listed in Appendix 2 of the JAS of organic processed foods (Notice No. 1606, the Ministry of Agriculture, Forestry and Fisheries, October 27, 2005). (However, prevention of entrance into plants is essential.)

In post-harvest processes, in principle, management has to be performed without chemical agents. If such management does not provide sufficient effects, the substances listed in Appendix 2 of the JAS of organic plants and in Appendix 2 of the JAS of organic processed foods can be used as mentioned above.

In Appendix 2 of the JAS of organic plants, substances under the condition of being used in the storage facilities include carbon dioxide fumigant and diatomaceous earth powder (see 3.2 (2)). The

substances listed in Appendix 2 of the JAS of organic plants are in compliance with the Agricultural Chemicals Regulation Act and presupposed to contact harvested plants when using them. However, diatomaceous earth powder is required to be removed after using based on the rule, “prevention of entrance into plants is essential.”

The substance listed in Appendix 2 of the JAS of organic processed foods is used for control of rodents and insects. These substances are not permitted to contact harvested plants.

(2) Points of evaluation

(a) Substances in Appendix 2 of the JAS of organic plants

As with the section 3.2 (1), such substances can be used if they correspond to the applicable plants listed.

(b) Substances in Appendix 2 of the JAS of organic processed foods

Confirmation methods of substances, which are listed in Appendix 2 of the JAS of organic processed foods and generally found in a food factory are described in the following page.

Table of major pest control substances used in processed food-producing factories

(Excerpted from Appendix 2 of the JAS of organic processed foods)

Substance	Conditions	Methods of confirmation
Pyrethrum extracts	Only those which do not contain piperonyl butoxide as a synergist.	Only those whose documents demonstrating the left column available from the producers can be used.
Diatomaceous earth, sodium bicarbonate, and carbon dioxide	None.	Such substances can be used for control of rodents and insects because there is no condition.
Ethanol	Except for use in the pest control of plants.	The left column is the condition of the usage. It has to be cautioned that ethanol cannot be used for plant sterilization and other purposes.
Boric acid	Only for use in insect traps. (Note: The statement, “only when a	The left column is the condition of the usage. Its usage has to be cautioned.

	‘container’ is used” is being considered in the revision of the JAS.)	
Pheromone	Only chemical agents whose active ingredients are substances having pest insect pheromone action. Except for use in the pest control of plants.	The term pheromone here is not pheromone which is a registered agricultural chemical used in farms, but it is a substance which attracts flying insects in production facilities. Documents showing the compliance with the former condition of the left column have to be obtained from the producers. As for the latter condition of the left-hand column, it is confirmed in a pamphlet that such substances are used for attracting insects, such as pyralid moths.
Plant extracts used for foods	Only those which are derived from natural substance without chemical treatment and are not used for pest control of plants.	Documents showing the compliance with the former condition of the left column have to be obtained from producers. When producers extract plants by themselves, judgment is conducted based on the documents on the production methods submitted by the producers. As for the latter condition of the left-hand column, its use has to be cautioned.

[Direction for revision of the JAS]

It is being considered that the above pheromone and attractants made from foods or food additives are added as attractants for sticky traps.

The substances listed in Appendix 2 other than the above substances are not often found in the production sites. When those substances are used, it is confirmed that they and their usage is in

compliance with the description in the right-hand column in Appendix 2 (Standards).