The Canadian Organic Standards
under public comment
May 2025

The background of the proposed revisions to the Canadian Organic Standards

Now it's your turn to comment!

Organic production systems

The background of the proposed revisions to

Permitted Substances Lists – CAN/CGSB-32.311

For details and to provide feedback,
visit the website of the Organic Federation of Canada
2025 Review of the Canadian Organic Standards

Every five years, the Canadian Organic Standards (COS) need to be reviewed to ensure they reflect the latest research findings and technology, and the current standards of our trading parties. With every review, the goal is to create standards that are strong, clear, and relevant to the needs of farmers, processors, consumers and other organic advocates.

The Organic Federation of Canada (OFC) is responsible for conducting the current review, which began in 2023 and should be completed by December 2025. In 2023, more than 300 petitions for changes to the 2020 COS were submitted by organic stakeholders. Each petition has been reviewed and discussed at length by an extensive team of thirteen working groups and task forces, which are made up of producers, inspectors, researchers, activists, processors and others. The recommendations made by the working groups and task forces have been submitted to the Canadian General Standards Board (CGSB) Technical Committee on Organic Agriculture, the body that will ultimately decide what changes are made to COS.

CGSB has launched a 60-day public review period of the proposed 2025 COS and has invited the public to comment on the draft.

To help operators, consumers and policymakers understand the reasons behind the proposed modifications, the OFC has created this guide that provides detailed descriptions of all the proposed modifications to the 2020 COS along with the rationales behind the proposed changes.

Now it's your turn to comment!

The review team

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The OFC sincerely thanks the sponsors of the review and Agriculture and Agri-Food Canada.

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Guide to this document

There are two OFC documents – one focused on changes to *CAN/CGSB-32.310-2020: Organic production systems: General principles and management standards* and the other contains details on changes to *CAN/CGSB-32.311: Organic production systems: Permitted Substances Lists*. The OFC documents are also available in French at https://organicfederation.ca/fr/revision-2025-normes-biologiques-canadiennes/.

This document contains the proposed changes to the 2020 Canadian Organic Standards (COS). In each of the following tables:

- the first column refers to the number of the clause or subclause;
- the second column contains the text from the 2020 COS with tracked changes; and
- the third column contains the rationale for the proposed change and, in some cases, links to related articles.

For tracked changes, strikethrough (~~such as this~~) is used for proposed deletions and underlining (like this) used to indicate additions. The rationale is shown in a blue font.

We encourage readers to visit the 2025 Review of the Canadian Organic Standards on the website of the Organic Federation of Canada (OFC). At this site, you will find:

- files with tracked changes and rationales for other clauses;
- links to the drafts made available for public comment by the Canadian General Standards Board (CGSB);
- links to CGSB's instructions and forms for providing comments;
- articles about the standards review, including feature articles on significant and/or controversial topics; and
- information about how you can support this critically important work.

Organic production systems - Permitted Substances Lists

	Rationale
Introduction	
Organic operations in Canada remain subject to all applicable laws and regulations. Substances that appear in CAN/CGSB-32.311, *Organic production systems — Permitted substances lists*, are subject to the *Pest Control Products Act* (PCPA) or the *Food and Drugs Act* (FDA) when used in Canada as pesticides or disinfectants. Health Canada's Pest Management Regulatory Agency (PMRA) is the federal authority responsible for the regulation of pest control products (including sanitizers) under the PCPA Regulations. Disinfectants are regulated by Health Canada's Therapeutic Products Directorate (TPD) under the FDA Regulations.	
Substances that appear in CAN/CGSB-32.311, *Organic production systems — Permitted substances lists*, are subject to the FDA when used in Canada as veterinary drugs destined to food producing animals and to the *Feeds Act* (FA) when used in Canada as livestock feed. Health Canada's Veterinary Drugs Directorate is the federal authority responsible for the regulation of veterinary drugs under the FDA Regulations. Livestock feeds are regulated by the Animal Feed Division of the Canadian Food Inspection Agency under the FA Regulations and the *Health of Animals Act*.	
This standard, in conjunction with CAN/CGSB-32.310, is intended for certification and regulation to prevent deceptive practices in the marketplace. The certification process assesses operational compliance. Certification is granted to compliant product.	
Annex A provides a list of permitted substances in alphabetical order.	
Notes and examples in this standard	
In this standard, notes and examples are used for giving additional information intended to assist the understanding or use of the document and are not a normative part of the standard.	

1 Scope		Rationale
1.2	This National Standard of Canada[1] provides additional information to CAN/CGSB-32.310, *Organic production systems — General principles and management standards,* in the form of permitted substances to be used as annotated in accordance with the scope of the table in which they are listed. Use of a listed substance in a manner inconsistent with the scope of the table in which it appears is not permitted, except as specified in a listed substance annotation. Listed substances shall comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310.	Clarification of text.
1.2	**Units of Measure** Quantities and dimensions in this standard are given in metric units with yard/pound equivalents, mostly obtained through soft conversion, given in parentheses. The metric units shall be regarded as official in the event of dispute or unforeseen difficulty arising from the conversion.	

2 Normative references		Rationale
2	**Normative references** The following normative documents contain provisions that, through reference in this text, constitute provisions of this National Standard of Canada. The referenced documents may be obtained from the sources noted below. NOTE The addresses provided below were valid at the date of publication of this standard. An undated reference is to the latest edition or revision of the reference or document in question, unless otherwise specified by the authority applying this standard. A dated reference is to the specified revision or edition of the reference or document in question.	
2.1	**Canadian General Standards Board (CGSB)** CAN/CGSB-32.310 — *Organic production systems – General principles and management standards*.	

[1] References throughout this document to "this National Standard of Canada" or "this standard" refer to CAN/CGSB-32.311, *Organic Production Systems – Permitted Substances Lists*.

2.1.1	**Source** The above may be obtained from the Canadian General Standards Board, Sales Centre, Ottawa ON Canada K1A 0S5. Telephone: 1-800-665-2472. E-mail: ncr.cgsb-ongc@tpsgc-pwgsc.gc.ca. Web site: www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-eng.html.	
2.2	**Canadian Council of Ministers of the Environment (CCME)** *Guidelines for compost quality*.	
2.2.1	**Source** The above may be obtained from the Canadian Council of Ministers of the Environment, 123 Main Street, Suite 360, Winnipeg, Manitoba R3C 1A3. Telephone: 204-948-2090. Fax: 204-948-2125. E-mail: info@ccme.ca. Web site: www.ccme.ca.	
2.3	**Bureau de normalisation du Québec (BNQ)** CAN/BNQ-0017-088 — *Specifications for compostable plastics*.	
2.3.1	**Source** The above may be obtained from the BNQ Web site at: www.bnq.qc.ca.	
2.4	**Demeter Production Standards** *Demeter Production Standards.*	
2.4.1	**Source** The above may be obtained from the Demeter Production Web site at: ~~https://www.demetercanada.ca/wp-content/uploads/2018/10/DI-production-stds-Demeter-Biodynamic-18-e.pdf~~. https://demeter.net/wp-content/uploads/2024/10/2025_Int_Dem_bio_Standard_eng.pdf	Updated reference.
2.5	**Pest Management Regulatory Agency (PMRA)** *PMRA list of formulants.*	
2.5.1	**Source** The above may be obtained from the PMRA Web site (https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management.html), at https://open.canada.ca/data/en/dataset/ededff77-a021-48d6-89a5-cdbcd75fb4ff.	
2.6	**Ministère du développement durable, de l'environnement et de la lutte contre les changements climatiques (MELCC)**	

	Guidelines for the Beneficial Use of Fertilizing Residuals	
2.6.1	**Source** The above can be obtained from the MELCC Website, at http://www.environnement.gouv.qc.ca/matieres/mat_res/fertilisantes/critere/guide-mrf.pdf (only available in French).	
2.7	**Organisation for Economic Co-operation and Development (OECD)** *OECD Guidelines for the Testing of Chemicals, Section 3: Environmental fate and behaviour*	
2.7.1	**Source** The above may be obtained from the OECD Web site at https://www.oecd-ilibrary.org/.	

3 Requirements for adding or amending substances in the lists

3.1	Clause 10 of CAN/CGSB-32.310 outlines the requirements for adding or amending listed substances.	

4 Permitted substances lists for crop production

		Rationale
4.1	**Classification**	
4.1.1	Crop production substances are classified according to the following uses and applications:	
4.1.1 a	Soil amendments and crop nutrition in Table 4.2 (Column 1) are substances applied to the soil to improve fertility ~~and~~, tilth and ~~to correct~~ soil ~~problems~~ biodiversity. Fertilizers, plant foods and soil amendments are primarily used for their plant nutrient content and may be applied to the soil or to plant foliage. Soil building practices and nutrient usage shall comply with CAN/CGSB 32.310 5.4.	Text modified to better describe the role of soil amendments.
4.1.1 b	Crop production aids and materials in Table 4.2 (Column 2) may be directly applied to the crop or soil, or used to control pests (including diseases, weeds and insects~~).~~) when organic management practices alone cannot prevent or control pests as specified in 5.6.2 of CAN/CGSB 32.310. Examples include: adjuvants, insect traps and plastic mulch, vertebrate animal pest management substances, and plant disease and insect pest management substances.	Text modified because some operators refer only to the Permitted Substances Lists only and are unfamiliar with requirements that apply to substance use according to CAN/CGSB-32.310 General Principles and Management Standards. The change reinforces that soil building is the foundation of organic production. The change clarifies that management practices should be the basis of pest control and the first approach. Production aids are permitted only when management practices alone cannot control pests.
4.1.2	Use of a listed substance in a manner inconsistent with the scope of the table in which it appears is not permitted, except as specified in substance annotations.	
4.1.3	Substances listed in Table 4.2 shall comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310. The following additional requirements apply to substances produced on substrates or growth media (for example, microorganisms and gibberellic acid):	
4.1.3 a	if the substance includes the substrates or growth media, the ingredients of the substrates or growth media shall be listed in Table 4.2;	

4.1.3 b	if the substance does not include the substrates or growth media, the substance shall be produced on non-genetically engineered substrates or growth media, if commercially available.	

Table 4.2 – Substances for crop production

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Acetic acid	Sources other than petrochemicals can be used. As an adjuvant, a pH regulator and for controlling pests (including weeds) and cleaning seeds.		●	
Adhesives for sticky traps and barriers			●	
Agar	For use in initial mushroom spawn production.	●		
Alfalfa meal and pellets	Shall be organic if commercially available.	●		
Algae	See Table 4.2 Aquatic plants and aquatic plant products.	●	●	
~~Amino acids~~	~~Derived from plants, animals or microorganisms, and extracted, hydrolyzed or isolated by non-chemical means, such as physical separation, or by substances listed in Table 4.2 (Column 1 or Column 2) excluding Formulants used in crop production aids.~~	●	●	The "Amino acids" listing has been replaced with two listings: "Hydrolyzed proteins of plant origin" and "Hydrolyzed proteins of animal origin".
Ammonium carbonate	As an attractant in insect traps.		●	
Animal manure, unprocessed	~~See clauses 5 and 6 of CAN/CGSB-32.310. See also Table 4.2 Manure, composted and Manure, non-organic.~~	●		"Animal manure" and "Animal manure, processed" have been changed to "Animal

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	Includes solid manure (manure mixed with bedding), liquid manure and slurry. Manure sources shall comply with the requirements specified in 5.4.2b)3) and 5.5.1 of CAN/CGSB-32.310. Usage must comply with 5.5.2.5. Concentrated nutrient extracts, such as those produced by distillation, are not considered animal manure.			manure, unprocessed" and "Animal manure, dried," respectively, for clarity. The "Animal manure, unprocessed" annotation prohibits concentrated nutrient extracts to clarify that these substances, even those derived from unprocessed liquid manure or slurry, are not considered animal manure. The "Animal manure, dried" annotation outlines the requirements for managing the risk of potential human pathogens in dried manure.
Animal manure, ~~processed~~ dried	~~Manures treated by mechanical or physical (including heat) methods are permitted. Additional ingredients shall be listed in Table 4.2 (Column 1).~~ Dried manure may be pelleted or granulated. ~~Manure sources shall conform to requirements specified in 5.5.1 of CAN/CGSB-32.310.~~ The operator shall be able to demonstrate that best practices known to eliminate human pathogens have been used in the production process; OR demonstrate that the product meets criteria for acceptable levels (MPN/g total solids) of human pathogens as specified in Guidelines for Compost Quality; OR follow the application restrictions in 5.5.2.5 of CAN/CGSB-32.310. See also ~~Table 4.2 Manure, composted and Manure, non-organic.~~ "compost" and "digestate, anaerobic" for microbially treated manure.	●		
Aquatic plant~~s and aquatic plant products~~ extracts	Aquatic plant extracts ~~products~~ may be ~~extracted by~~ produced using the following substances in order of preference: a) substances listed in Table 4.2 ~~Extractants~~ (Column 1 or 2) with the exception of "Formulants used in Crop Production Aids"; b) potassium hydroxide ~~c) sodium hydroxide~~ provided the amount of solvent used does not exceed the amount necessary for extraction. The operator shall provide an affidavit from the	●	●	This new listing is for aquatic plant extracts only while aquatic plant material falls under the new "Plant material" listing. Sodium hydroxide (in b) is no longer permitted as an extractant because it is caustic, not commonly used, and its removal should not impact the sector.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	manufacturer that proves the need to use ~~sodium~~ potassium hydroxide; c) potassium sorbate; and d) sodium benzoate ~~and potassium sorbate may be used as preservatives for water-extracted aquatic plant products. All other preservatives are prohibited unless listed in Table 4.2 (Column 1 or 2) with the exception that Formulants used in crop production aids are prohibited.~~ Aquatic plant extracts shall not contain more than: a) 1.5% total nitrogen (dry basis); b) 0.5% P2O5 (dry basis); and c) 20% K2O (dry basis). Ammonium nitrogen shall not exceed 20% of total nitrogen. Nitrate nitrogen shall not exceed 20% of total nitrogen. See Table 4.2 Plant material listing for use of unprocessed aquatic plants.			The annotation no longer restricts the use of sodium benzoate (in d) to only water-extracted aquatic plant products. Preserving other types of aquatic plant products is just as valid/necessary. The annotation now contains limits on maximum nutrient levels; these levels reflect the estimated nutrient content in unadulterated aquatic plant products. The new testable criteria (e.g., maximum levels of N, P, K) serve as a tool for assessing compliance and preventing undeclared substances/fraudulent products, thereby ensuring organic integrity.
Ascorbic acid (vitamin C)			●	
Ash	Ash shall be from plant and animal sources. Ash from burning manure or from burning minerals, coloured paper, plastics or other non-biological substances is prohibited. Ash containing materials that cannot be verified or containing prohibited substances shall not exceed the limits (category C1) for acceptable levels (mg/kg) of arsenic, cadmium, chromium, lead	●	●	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	and mercury, as specified in *Guidelines for the Beneficial Use of Fertilising Residuals*. Shall not cause a build-up of heavy metals or micronutrients in soil.			
Baits for rodent traps	May contain food or substances listed in Table 8.1.		●	
Bentonite	See Table 4.2 Mined minerals, unprocessed and Clay.	●	●	
Biochar	Produced through pyrolysis of forestry by-products which have not been treated or combined with prohibited substances. Recycled biochar from contaminated remediation sites is prohibited.	●		
Biodegradable plant containers	Biodegradable planting containers (for example, bio-based pots or cell packs and paper chain pots) may be left to decompose in the field if all ingredients, including adhesives, are listed in Table 4.2 (Column 1). Biodegradable plant containers (including those that contain ingredients not listed in Table 4.2) may be used as compost feedstocks.		●	This listing was modified to include details about paper chain pots. These paper-based transplanting aids are not necessarily 100% bio-based. They may contain synthetic ingredients and therefore cannot be left to decompose in the soil. The use of chain pots is permitted, albeit implicitly, under this listing but only if they are removed after use.
Biodynamic preparations for compost, soil and plants	As described in ~~Appendix 10 of~~ the *Demeter Production Standards*.	●	●	Updated reference.
~~Biological organisms~~	~~Biological organisms (living, dead or as extracts), such as viruses, bacteria, protozoa, phages, fungi, insects and nematodes. Pharmaceuticals derived from or by biological sources, such as natamycin, penicillin and streptomycin, are prohibited even if registered as pesticides.~~	●	●	This listing has been eliminated because it is now redundant. The dead organisms that had been included in this listing will be addressed under the new Microbial

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	~~See Table 4.2 Invertebrates; Microorganisms and microbial products.~~			extracts listing, while other organisms and beneficial insects are covered by the Invertebrates listing.
Blood meal	Shall be sterilized.	●		
Bone meal	Shall be guaranteed free of Specified Risk Material (SRM).	●		
Borate (boric acid)	Mined sources of sodium tetraborate and octaborate are permitted as wood preservatives. Permitted for structural pest control (example: for ants). Direct contact with organic food or crops is prohibited in the case of products formulated as pesticides.		●	
Boron	~~The following soluble boron products are permitted:~~ ~~a) borate (boric acid);~~ ~~b) sodium tetraborate (borax and anhydrous); and~~ ~~c) sodium octaborate.~~ Borates including hydrated borates of sodium (octaborate, pentaborate, tetraborate, borax), boric acid, and boron-lignosulphonate complexes (except those containing ammonium lignosulphonate). Ammonium borates, boron-amino acid complexes and boron/potassium nitrate mixes are not permitted. May only be used when soil and plant deficiencies are documented by visual symptoms or by testing soil or plant tissue, or when the need for a preventative application can be documented ~~See Table 4.2 Micronutrients.~~	●		The listing has been modified to (1) have a consistent format with other micronutrient listings, (2) include sodium pentoborate which is no worse or better than sodium tetraborate or sodium octaborate, and (3) clearly identify which forms of borates are not permitted.
Botanical pesticides	Botanical pesticides shall be used in conjunction with a biorational pest management program. They shall not be the primary method of pest		●	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	control. The least toxic botanicals shall be used in the least ecologically disruptive way possible. All label restrictions and directions shall be followed, including restrictions concerning crops, livestock, target pests, safety precautions, pre-harvest intervals and worker re-entry.			
Brewers' grains and solubles **[NEW]**	A by-product or by-products from the production of alcohol by fermenting grain. Shall be from non-GE grain. Shall not contain more than 7% total nitrogen (dry basis). Ammonium nitrogen shall not exceed 15% of the total nitrogen. Nitrate nitrogen shall not exceed 10% of the total nitrogen. Any additives shall be listed in Table 4.2 Column 1. Shall not be fortified with nitrogen.	●		The listings for Distillers' grains and solubles and Brewers' grains replace the more general listing for Stillage and stillage extract. The annotation indicates acceptable sources, the source and the restriction of GE-grains. The maximum nutrient levels reflect the expected nutrient levels if the substance is unadulterated. These limits serve as criteria to prevent the use of undeclared substances/fraudulent products, thereby ensuring organic integrity.
Calcium	Calcium carbonate (calcitic limestone), calcium magnesium carbonate (dolomitic limestone), calcium silicate, and calcium sulphate (gypsum), all from mined sources. Other biological or mineral sources, such as shells from aquatic animals (for example, oyster shell flour), aragonite, eggshell meal and lime from sugar processing. Calcium chloride derived from naturally occurring brines ~~and not chemically treated~~. May be chelated with substances listed under Table 4.2 Chelates.	●		The reference to "chemically treated" has been removed from the annotation regarding "calcium chloride from naturally occurring brines" to avoid confusion and because it was redundant with Clause 4.1.3, which states that, "substances listed in Table 4.2 shall comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310". The Calcium listing was modified (regarding chelates) to ensure further scrutiny when approving products chelated with other substances listed in Table 4.2. Certain calcium products claim

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	Prohibited forms include slaked limestone (calcium hydroxide); quicklime (calcium oxide); calcium sulphate produced using sulphuric acid and calcium products that have been used in controlled atmosphere storage. See Table 4.2 Calcium sulphate (gypsum) for additional restrictions on this substance.			chelation with amino acids. Calcium chelated with hydrolyzed proteins of animal or plant origin (which replace the Amino acids listing) will only be permitted if it meets the maximum nutrient requirements of hydrolyzed proteins.
Calcium lignin sulphonate	See Table 4.2 Lignin and lignin sulphonates (lignosulphonates)	•	•	
Calcium polysulphide	See Table 4.2 Lime sulphur.		•	
Calcium sulphate (gypsum)	Mined sources are allowed; calcium sulphate produced using sulphuric acid is prohibited. To correct calcium and sulphur deficiencies and soil salinity problems.	•		
Cannery wastes	Shall be from organic sources. Non-organic cannery wastes shall be composted. See Table 4.2 Compost feedstocks.	•		
Carbon dioxide (CO_2)	For soil and greenhouse use, for controlled atmosphere storage, and for storage pest control.		•	
Cardboard	Cardboard shall not be waxed or impregnated with fungicide or prohibited substances. For use as mulch, as composting feedstock or as pest trapping material. See Table 4.2 Compost feedstocks.	•	•	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Chelates	~~Chelating agents that are listed in Table 4.2 (Column 2) are permitted. Examples include Acetic acid; Ascorbic acid; Citric acid; Humates; Lignin and lignin sulphonates (lignosulphonates) and Vinegar~~. The following acids may be used to chelate metallic nutrient elements listed in Table 4.2: Acetic (including vinegar), Ascorbic, Citric, Humic, Fulvic, and Lignosulphonic.	•	•	The 2020 COS permitted all substances listed in Table 4.2, Column 2 to be used as chelating agents, including PMRA list 4 formulants such as EDTA. The annotation now identifies the most common chelating agents (acids) used in fertilizers that would be approved for organic use. Amino acids were removed from the list to prevent potential misuse of micronutrient fertilizers chelated with amino acids. Chelation with amino acids results in liquid fertilizers with high levels of nitrogen (6% or more), which provides the opportunity for potential misuse as a source of liquid N (coupled with potential excess application of micronutrients). As the term 'chelate' may be unfamiliar to many, the wording, “acids may be used to chelate metallic nutrient elements” was added to emphasize that chelation is the double bonding of a metal ion with a ligand (chelating agent).
[NEW] Chitosan	Including chitosan hydrochloride and chitosan oligosaccharides (COS).	•	•	The substance was added because (1) it is a derivative of a natural product, (2) it has a low environmental impact, and (3) acts as crop protectant stimulating the plant's natural defenses and inhibiting the growth of fungi.
Cholecalciferol (vitamin D_3)	Permitted if used outdoors and inside greenhouses for rodent control when methods described in 5.6.1 of CAN/CGSB-32.310 have failed.		•	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	Prohibited inside on-farm food processing and food storage facilities.			
Citric acid			●	
Clay	Bentonite, perlite and kaolin as soil amendments, as seed pellet additives or for pest control. See Table 4.2 Mined minerals, unprocessed; Bentonite; Kaolin clay.	●	●	
[NEW] Cobalt	Sulphates, carbonates, oxides and chlorides of cobalt are permitted when soil deficiencies are documented by testing soil or plant tissue, or when the needs of soil microbes or livestock can be documented. Nitrates, amino acid chelates, and synthetic chelates are not permitted. Shall be used with caution to prevent excessive cobalt accumulation. Cobalt build-up in soil shall prohibit future use.	●		Cobalt is a beneficial micronutrient and should be permitted under certain conditions as outlined in the annotation. See also rationale for Micronutrients.
[NEW] Coir (coconut fiber)	Washed, processed and/or buffered (to adjust pH) with substances listed in Table 4.2 (Column 1 or Column 2) excluding Formulants used in crop production aids.		●	A separate listing for coir (coconut fibre) has been created because coir is an important substrate/growth medium for the organic sector and warrants its own listing. Currently, coir is assumed to fall under the "Plant by-products and plants" listing but without specific mention, approval can be challenged since plant by-products that have been treated or produced with prohibited substances are only permitted as compost feedstocks. The annotation includes details on what coir treatments are permitted. See Coir at https://mailchi.mp/organicfederation/some-modifications

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Compost	Compost produced on the farm is restricted to compost produced on a certified organic farm. Compost from off-farm sources includes every other source, for example: municipal, residential or industrial sources, or from any organic or non-organic farm. See Table 4.2 Compost from off-farm sources; Compost produced on the farm; Compost tea; and Compost feedstocks. For information on compost starters, see Table 4.2 Microorganisms and microbial products. For information on vermicompost, see Table 4.2 Worm castings.	●		
Compost feedstocks	Acceptable feedstocks include: a) animal manures conforming to criteria specified in 5.5.1 of CAN/CGSB -32.310; b) animals, animal products and by-products (including fishery); c) plants and plant by-products (including forestry and source-separated yard debris, such as grass clippings and leaves), pomaces and cannery wastes; d) soils and minerals that conform to the requirements of this standard and of CAN/CGSB-32.310; and e) paper yard waste bags which contain coloured ink~~.~~; and f) anaerobic digestate that conforms to the requirements of this standard. Substances listed in Table 4.2 (Column 1) are permitted in compost feedstocks when they meet the annotations therein.	●		The annotation was expanded to provide more clarity.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	When evidence indicates that compost feedstocks could contain a substance or substances prohibited by 1.4 or 1.5 of CAN/CGSB-32.310 that is known to be potentially persistent in compost, ~~testing~~ before using the compost, operators shall provide compost test results indicating no presence of the ~~compost before use is required~~ prohibited substance or a reference to scientific literature ~~which~~ that establishes that the specific potential contaminant(s) will degrade during the composting process. The following composting feedstocks are prohibited: sewage sludge; compost starter and feedstocks fortified with substances not included in this standard; leather by -products; glossy paper; waxed cardboard; paper containing coloured ink other than paper yard waste bags; and animals, animal products and animal by-products not guaranteed free of Specified Risk Material (SRM).			
Compost from off-farm sources	Compost obtained from off-farm sources shall conform to the criteria specified in Table 4.2 Compost feedstocks. If compost is obtained from another farm, feedstock sources shall be documented. Compost obtained from all other sources shall comply to the following: a) shall not exceed the maximum acceptable levels of arsenic, cadmium, chromium, lead and mercury (mg/kg) and foreign matter outlined for unrestricted use compost (Category A), as specified in *Guidelines for Compost Quality*; b) shall meet criteria for acceptable levels (MPN/g total solids) of human pathogens as specified in *Guidelines for Compost Quality*; and c) shall not cause heavy metal buildup in soil.	●		

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Compost produced on the farm	Compost produced on the farm shall conform to the criteria specified in Table 4.2 Compost feedstocks. In addition, if made from animal manures or other likely sources of human pathogens, compost produced on the farm shall: a) reach a temperature of 55 °C (130 °F) for a period of four consecutive days or more. The compost piles shall be mixed or managed to ensure that all of the feedstock heats up to the required temperature for the minimum time; or b) meet limits for acceptable levels (Most Probable Number of total solids per gram [MPN/g total solids]) of human pathogens specified in *Guidelines for Compost Quality*; or c) be considered as aged or raw manure rather than compost, that is, meeting requirements specified in 5.5.2.5 of CAN/CGSB-32.310.	•		
Compost tea	Compost tea shall be made from composts that conform to criteria specified in Table 4.2 Compost produced on the farm; Compost from off-farm sources; or Worm castings. Additional ingredients shall be listed in Table 4.2 (Column 1). If compost tea is applied directly to the edible parts of plants, the operator shall be able to demonstrate that best practices known to eliminate pathogens during the processing have been used OR that the requirements for raw manure, as specified in 5.5.2.5 of CAN/CGSB-32.310, have been met.	•	•	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	See the *Compost tea* definition in clause 3 of CAN/CGSB-32.310.			
[NEW] Condensed molasses fermentation solubles (Vinasse)	A by-product from the fermentation of cane, beet or agave sugar and/or their respective molasses. Shall be from non-GE feedstock. Shall not contain more than 7% total nitrogen (dry basis). Ammonium nitrogen shall not exceed 15% of the total nitrogen. Nitrate nitrogen shall not exceed 10% of the total nitrogen. Any additives shall be listed in Table 4.2 Column 1 Shall not be fortified with nitrogen.	•		See rationale for Brewers' grains and solubles. .
Copper (plant nutrition)	~~The following copper products may be used to correct documented copper deficiencies: copper sulphate, basic copper sulphate, copper oxide and copper oxysulphate.~~ ~~Copper ammonia base, copper ammonium carbonate, copper nitrate and cuprous chloride are prohibited.~~ Sulphates, carbonates, oxides and oxysulphates of copper may be used when soil and plant deficiencies are documented by visual symptoms or by testing soil or plant tissue, or when the need for a preventative application can be documented. May be chelated with lignosulphonic acid or other acids included in table 4.2. Nitrates, chlorides, hydroxides, amino acid chelates, synthetic chelates, and ammonia-copper complexes are not permitted.	•		The annotation has been modified to have a consistent format with other micronutrient annotations, including expanding the requirement to demonstrate soil deficiency. The annotation specifies which chelates are permitted and which forms of copper are not permitted. The oxysulphate form of copper is now included to be consistent with other micronutrient listings.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	Shall be used with caution to prevent excessive copper accumulation in the soil. Copper build-up in soil shall prohibit future use. Visible residue of copper products on harvested crops is prohibited. ~~See Table 4.2 Micronutrients.~~			
Copper (production aid)	Copper sulphate, copper hydroxide, copper octanoate, Bordeaux mix, copper oxychloride and copper oxide. Permitted for use as a wood preservative, or for controlling pests, including diseases. Shall be used with caution to prevent excessive copper accumulation in the soil. Copper build-up in soil shall prohibit future use. Visible residue of copper products on harvested crops is prohibited.		•	
Diatomaceous earth	Non-calcined forms. May contain substances listed in Table 4.2 (Column 2).		•	
Digestate, anaerobic	Permitted to be used for soil amendment, provided that the following conditions are met: a) the materials added to the digester shall be listed in Table 4.2 (Column 1~~). If)~~ or permitted by Compost feedstocks~~ are obtained from off-farm sources,~~ ; b) nutrients, vitamins and trace minerals other than nitrogen and phosphorus may be supplemented (in amounts needed for optimal metabolic performance of the ~~digestate~~ digester) without restriction; ~~b) the criteria for the application of raw manure on land specified in 5.5.2 of CAN/CGSB-32.310 shall be met if the digestate feedstocks include manure;~~	•		Anaerobic digestate is a by-product of waste treatment for biogas production. Depending on the feedstocks and in order to facilitate optimal digestion, nutrients may be added during the process. These nutrients, vitamins and trace minerals may be used as needed without restriction.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	c) shall ~~comply with the heavy metal restrictions in Table 4.2 Compost from off-farm sources;~~ ~~b)~~not exceed maximum acceptable levels of arsenic, cadmium, chromium, lead and mercury (mg/kg) and foreign matter outlined for unrestricted use compost (Category A), as specified in Guidelines for Compost Quality; and d) shall meet the criteria for acceptable levels (MPN/g total solids) of human pathogens as specified in Guidelines for Compost Quality or shall meet the criteria for the application of raw manure on land specified in 5.5.2 of CAN/CGSB-32.310 ~~shall be met if feedstock include manure;~~. When digestate feedstocks could contain a substance or substances prohibited by 1.4 or 1.5 of CAN/CGSB-32.310 that is potentially persistent, before using the digestate operators shall provide test results indicating no presence of a prohibited substance or a reference to scientific literature that establishes that the specific potential contaminant(s) will degrade during the digestion process. It is permitted to use anaerobic digestate as a compost feedstock if it is added to other substances which are then composted. See Table 4.2 Compost feedstocks.			
[NEW] Distillers' grains and solubles	A by-product or by-products from the production of alcohol by fermenting grain. Shall be from non-GE grain.	•		See rationale for Brewers' grains and solubles.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	Shall not contain more than 7% total nitrogen (dry basis). Ammonium nitrogen shall not exceed 15% of the total nitrogen. Nitrate nitrogen shall not exceed 10% of the total nitrogen. Any additives shall be listed in Table 4.2 Column 1. Shall not be fortified with nitrogen.			
Dormant oils	For use as a dormant spray on woody plants. Shall not be used as a dust suppressant.		●	
Dust suppressants	Vegetable oils, organic molasses or substances listed in Table 4.2 (Column 1 or 2) ~~for example: Lignin and lignin sulphonates (lignosulphonates)~~ are permitted, for example: Lignin and lignin sulphonates (lignosulphonates), excluding Formulants used in crop production aids. Petroleum products are prohibited.	●	●	Reorganized text for clarity.
Enzymes	Derived from plants, animals or microorganisms~~ through the action of microorganisms~~.	●	●	The term "through the action of microorganisms" was removed because it was redundant, confusing, and unnecessarily excluded enzymes extracted from plants.
Extractants	The following may be used as extractants: a) water; b) culinary steam, as described in 8.1.2 b) of CAN/CGSB-32.310; c) fats and oils, such as cocoa butter, vegetable oils, lanolin and animal d) fats, and alcohols other than isopropyl alcohol;	●	●	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	e) supercritical CO_2; and f) substances listed in Table 4.2 (Column 1 or 2) except for Formulants used in crop production aids.			
Feather meal		●		
Ferric phosphate (iron ortho-phosphate, iron phosphate)	Permitted as a molluscicide (for slug and snail control). Shall be used in such a manner that runoff into water bodies is prevented. Contact with crops is prohibited.		●	
Fibre row covers	Shall not be incorporated into the soil or left in the field to decompose; shall be removed at the end of the growing season.		●	
Fish products	The following fish products are permitted: fish meal; fish powder; fish farm wastes and hydrolysate, emulsions and solubles. Fish farm wastes shall be composted. Only substances listed in Column 1 or 2 of Table 4.2 can be added to fish products with the exception that the addition of Formulants used in crop production aids is prohibited. Chemical treatment is prohibited, with the exception of the following substances which are in preferential order: a) vinegar; b) citric acid; c) phosphoric acid; or d) sulphuric acid.	●		

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	The amount of acid used shall not exceed the minimum needed to stabilize the product.			
Formulants used in soil amendments	~~Formulants used in soil amendments s~~ Shall be derived from biological or mineral sources unless a substance annotation allows the use of a specified formulant. Shall be derived from biological or mineral sources unless a substance annotation allows the use of a specified formulant. ~~For example, see Table 4.2 Aquatic plants and plant products; Fish products; Humates, humic acid and fulvic acid~~. Substances listed elsewhere in Table 4.2 (Column 1) and used as formulants in soil amendments are subject to the annotations therein.	●		The annotation clarifies that a formulant is permitted for its functional effect on the substance and not permitted as an active ingredient ,thereby discouraging the misuse of formulants as a nutrient source. The new definition for "Derived from biological or mineral sources" will further clarify that formulants cannot be new compounds synthesized from biological or mineral sources, but can only be isolated or extracted from these sources.
Formulants used in crop production aids	Formulants used in crop production aids may only be used with substances listed in Column 2 of this table. Only formulants classified as List 4A or 4B by the Pest Management Regulatory Agency (PMRA) or derived from biological or mineral sources may be used with substances in Table 4.2 (Column 2). Formulants classified as List 3 by PMRA may be used with passive pheromone dispensers. Formulants classified as List 4A, 4B or 3 by PMRA are not subject to 1.4 or 1.5 of CAN/CGSB-32.310. Formulants classified as List 1 or 2 by PMRA are prohibited.		●	
[NEW] Frass	A by-product of insect farming. Shall be from an organic source if commercially available.	●		Frass was added because it is becoming a readily available soil amendment which is

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	If the frass is not from an organic source and contains undigested feed or bedding materials that are not listed in Table 4.2 (column 1), the frass shall be composted before using it as a soil amendment.			similar, but not identical, to animal manure.
~~Guano~~	~~Shall be decomposed, dried deposits from wild bats or birds. Domesticated fowl excrement is considered to be Manure, not Guano.~~	•		There are two types of guano in the global marketplace; fresh (a source of nitrogen and phosphorus) and fossilized or mineralized (a source of phosphorus). Some mineralized phosphorus products may actually be fossilized from guano; however, many are indistinguishable from phosphate rock. There are several potential negative consequences to using guano: (1) toxic metals may accumulate in the soil, (2) the guano may contain fungal or viral pathogens, which may pose a health risk to guano harvesters and farmers using guano, (3) harvesting may pose an ecological threat to bats or seabirds. Furthermore, CFIA does not permit guano to be imported into Canada as a fertilizer. Even if the guano is fossilized, these issues may be a concern if the mine is near an active bat or seabird colony. See Guano: organic fertilizer or trigger for war and pandemics? at https://mailchi.mp/organicfederation/guano.
Growth regulators for plants	Plant hormones, such as gibberellic acid, indoleacetic acid and cytokinins, derived from terrestrial or aquatic plants or produced by microorganisms.		•	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Homeopathic preparations			●	
Hormones	See Table 4.2 Growth regulators for plants.		●	
Humates, humic acid and fulvic acid	Permitted if mined; produced through microbial activity; extracted by physical processes; or with: a) Table 4.2 Extractants; or b) potassium hydroxide—potassium hydroxide levels used in the extraction process shall not exceed the amount required for extraction. Levels (mg/kg) of arsenic, cadmium, chromium, lead and mercury shall not exceed the limits (category C1) specified in *Guidelines for the Beneficial Use of Fertilising Residuals.* Shall not cause a build-up of heavy metals or micronutrients in soil.	●		
Hydrated lime (calcium hydroxide)	For plant disease control.		●	
Hydrogen peroxide			●	
[NEW] Hydrolyzed proteins of plant origin	Resulting from enzymatic hydrolysis. Shall not contain more than 0.3% hydroxyproline (as a % of total amino acids). Shall not contain more than 15% N (dry basis). At least 90% of the total nitrogen shall be organic (protein) nitrogen. Isolated amino acids such as glycine, lysine and methionine are prohibited.	●		"Hydrolyzed proteins of plant origin" and "Hydrolyzed proteins of animal origin" replace "Amino acids". Both annotations contain content restrictions that reflect nutrient levels in unadulterated products. The criteria serve as a tool for assessing compliance and preventing undeclared
[NEW] Hydrolyzed	Resulting from enzymatic hydrolysis.	●		

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
proteins of animal origin	Shall not be applied to the edible portion of crops. Shall not contain more than 17% N (dry basis). At least 90% of the total nitrogen shall be organic (protein) nitrogen. Isolated amino acids such as glycine, lysine and methionine are prohibited.			substances/fraudulent products, thereby ensuring organic integrity. Differentiating between plant-origin and animal-origin hydrolyzed proteins will add clarity to further deter fraudulent claims of plant vs animal origin. Limitation on the hydroxyproline content (prevalent in mammalian collagen) will allow for verification of origin of protein. Higher levels indicate animal origin. Limiting nitrogen content will discourage fraudulent claims and allow for verification of acceptable processing (enzyme hydrolyzed) while higher concentrations would be the result of acid hydrolysis and possible addition of ammonium sulphate. The nitrogen concentrations are based on data from tested products. Lastly, restricting the application of animal-origin hydrolyzed proteins to the edible portion of crops will help safeguard against health issues and maintain the vegetarian status of the food.
Inoculants	See Table 4.2 Microorganisms and microbial products.	●		
Invertebrates	Worms, insects (including sterile insects), nematodes, arthropods and other invertebrates. See Table 4.2 Worm castings; Shells from aquatic animals.	●	●	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Iron	~~The following sources of iron are permitted to correct documented iron deficiencies: ferric oxide, iron citrate, iron sulphate (ferric or ferrous) or iron tartrate.~~ Sulphates, carbonates, chlorides, oxides, oxysulphates, citrates, tartrates or permitted chelates of iron may be used when soil and plant deficiencies are documented by visual symptoms or by testing soil or plant tissue, or when the need for a preventative application can be documented. Iron chloride may be used to prevent loss of phosphorus in soils prone to flooding. Nitrates, hydroxides, amino acid chelates, synthetic chelates, and ammonia-iron complexes are not permitted. ~~See Table 4.2 Micronutrients.~~	●		The annotation has been modified to have a consistent format with other micronutrients. Iron chloride is permitted for flood-prone land. With climate change and the increasing frequency of extreme weather events causing flooding, allowing its use will prevent the loss of phosphorus, an essential nutrient which is in finite supply.
Kaolin clay	May be calcined. Shall not be processed or fortified with substances unless listed in Table 4.2 (Column 2).		●	
Kelp and kelp products	See Table 4.2 Aquatic plants and aquatic plant products.	●	●	
Leaf mould		●		
Lignin and lignin sulphonates (ligno-sulphonates)	Permitted as ~~chelating agent(s), as~~ formulant ingredient(s) such as chelating agents(s), binding agent(s), and as dust suppressant(s). Ammonium lignosulphonate is prohibited. Other lignin forms such as lignosulphonic acid, calcium lignosulphonate, magnesium lignosulphonate, sodium lignin and sodium lignosulphonate are permitted.	●	●	The permitted uses have been reorganized. Binding agent was added as an example to clarify that its use is permitted.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Lime sulphur (calcium polysulphide)	Permitted on plants as: a) a fungicide; b) an insecticide; and c) an acaricide (mite control).		●	
Limestone	Mined magnesium and calcium carbonates. See Table 4.2 Calcium.	●		
Magnesium	The following sources are permitted: a) mined magnesium rock; b) magnesium chloride derived from natural brines and not chemically treated; c) mined calcium magnesium carbonate (dolomitic limestone) that has not been slaked; d) potassium magnesium sulphate (langbeinite); e) magnesium sulphate (kieserite or Epsom salts) may be used when soil and plant deficiencies are documented by visual symptoms or by testing of soil or plant tissue, or when the need for a preventative application is documented.	●		
Manganese	~~Manganous oxide and manganese sulphate are permitted to correct a documented manganese deficiency.~~ Sulphates, oxides, oxysulphates, carbonates, chlorides, citrates, tartrates or permitted chelates of manganese may be used when soil and plant deficiencies are documented by visual symptoms or by testing soil or	●		The annotation has been modified to have a consistent format with other micronutrients and to provide more details.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	plant tissue, or when the need for a preventative application can be documented. Nitrates, hydroxides, amino acid chelates, synthetic chelates, and ammonia-manganese complexes are not permitted. ~~See Table 4.2 Micronutrients.~~			
~~Manure, composted~~	~~See Table 4.2 Compost. See also Table 4.2 Animal manure and Animal manure, processed.~~	●		The annotations "Manure, non-organic source" and "Manure, composted" have been eliminated from Table 4.2 because they were redundant and already covered by (1) the Compost feedstock annotation in Table 4.2, which lists manure as an acceptable feedstock, and (2) the reference to non-organic manure as permitted by CAN /CGSB 32.310: 5.5.1.1. These annotations were also redundant with "Animal, manure." The requirements of manure are addressed in "Animal Manure, unprocessed" and "Animal manure, dried."
~~Manure, non-organic manure source~~	~~See 5.5 of CAN/CGSB-32.310. See also Table 4.2 Animal manure and Animal manure, processed.~~	●		
Meat meal	Shall be processed by drying or heat sterilization or composted.	●		
[NEW] Microbial extracts	Extracts of microorganisms (viruses, bacteria, protozoa, phages, and fungi) such as spinosad. Products may contain dead microorganisms and substances in Table 4.2 (Column 1 or 2). Products derived from substances that cannot be verified or derived from materials not listed in table 4.2 (column 1 or 2), may be used. Pharmaceuticals derived from biological sources, such as natamycin,		●	This substance was added to permit substances extracted from dead microorganisms. These extracts had been included under the Microorganisms and microbial products, which has been modified to include only live, purposefully grown microbial products while excluding microbial extracts and microbial fertilizers.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	penicillin and streptomycin, are prohibited even if registered as pesticides. Does not include nutrient extracts such as nitrogen extracted from microorganisms. See Table 4.2 Microorganisms and microbial products and Microbial fertilizers.			
[NEW] Microbial fertilizers	Microbial biomass that is the by-product of food processing. Examples include bacterial biomass and yeast press cake. If the growth substrate includes substances not listed in Table 4.2 Column 1, the growth substances (substrate) shall not be present in the final product, or be present at levels which have no *material* functional effect. Carriers or substances added to or expected to be present in the final product shall be listed in Table 4.2 Column 1. Does not include substances extracted from microbes or produced by fermentation. See Table 4.2 Microbial extracts and Microorganisms and microbial products.	•		This substance was added to separate microbial fertilizers from the microorganisms and microbial products in general since microbial fertilizers have a much different use and origin than their crop aid counterparts. The source of the fertilizers has been restricted to by-products of food production wastewater treatment; this excludes microbial fertilizers that were grown by using synthetic fertilizers and/or other growth substances to increase the nutrient content of the final product (i.e., the microbial fertilizer). The annotation limits the level of growth substances to what is needed to grow and support the microbial biomass. These growth substances and their presence in the microbial fertilizer are restricted to only ineffectual levels.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Microorganisms and microbial products	Living ~~M~~ microorganisms, such as viruses, bacteria, protozoa, phages, and fungi~~, are permitted living, dead or as extracts.~~ Microbial products may contain substances in Table 4.2 (Column 1 or 2). Examples include ~~the following~~: rhizobium bacteria; mycorrhizal fungi; ~~azolla;~~ yeast; Bacillus thuringiensis; virus and virus sprays (e.g., granulosis)~~; and spinosad~~. Microbial ~~fertilizers or microbial soil amendments~~ products derived from substances that cannot be verified or are derived from materials not listed in Table 4.2 (Column 1 or 2), may be used with the exception of municipal sewage sludge, which is prohibited. ~~When used, microbial fertilizers shall not exceed the limits (category C1) for acceptable levels (mg/kg) of arsenic, cadmium, chromium, lead and mercury, as specified in Guidelines for the Beneficial Use of Fertilising Residuals. Shall not cause a build-up of heavy metals or micronutrients in the soil.~~ Ionizing radiation is permitted for use on a peat moss carrier before the addition of microbial inoculants. Radiation is otherwise prohibited. Pharmaceuticals derived from biological sources, such as natamycin, penicillin and streptomycin, are prohibited even if registered as pesticides. See Table 4.2 Microbial extracts and Microbial fertilizers.	•	•	This listing has been modified to only include products from live microorganisms while excluding products/extracts from dead microorganisms and microbial fertilizers.
~~Micronutrients~~	~~Plant micronutrients (trace elements) are Iron, Manganese, Zinc, Copper, Molybdenum, Boron, Chlorine and Silicon.~~	•		This listing has been replaced by individual micronutrient listings to avoid confusion and to provide specific details about different micronutrients.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	~~Micronutrient fertilizers may only be used when soil and plant deficiencies are documented by visual symptoms or by testing of soil or plant tissue, or when the need for a preventative application can be documented. Chelation with substances listed under Table 4.2 Chelates is permitted. EDTA, DTPA, EDDHA, nitrate and ammonium forms of micronutrients are prohibited.~~ ~~See specific annotations for Boron; Silicon; Copper; Iron; Manganese; Molybdenum and Zinc in Table 4.2.~~			The Micronutrients listing was general in nature and permitted any micronutrients until COS 2020 when a definitive list of plant essential nutrients was embedded in the annotation. As an unintended result, beneficial micronutrients, which had been permitted under the general Micronutrients listing before 2020, were no longer permitted unless they were listed specifically in Table 4.2.
Milk and milk by-products		●	●	
Mined minerals, unprocessed	Mined minerals include basalt, pumice, sand, feldspar, mica, granite dust and unprocessed rock dust. Minerals extracted from seawater are permitted. To be allowed as a mined mineral, the product shall not have undergone any change in its molecular structure through heating, processing, ion exchange or combining with other substances. Sodium nitrate ~~and rock dust that have been mixed with petroleum products, such as those from stone engraving, are~~ is prohibited. <u>Rock dust mixed with petroleum products, such as those from stone engraving, is prohibited.</u> See annotations for specific minerals in Table 4.2 (Column 1).	●		The annotation has been modified to clarify that sodium nitrate is prohibited (and not just sodium nitrate mixed with petroleum products). See details re: Chilean nitrate (which is not permitted) at <u>https://mailchi.mp/organicfederation/review-rejectedpetition.s</u>
Molasses	Shall be organic.	●		

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Molybdenum	~~To correct documented molybdenum deficiencies.~~ Sodium molybdate and molybdenum trioxide may be used when soil and plant deficiencies are documented by visual symptoms or by testing soil or plant tissue, or when the need for a preventative application can be documented. Ammonium molybdate and amino acid chelates/complexes are not permitted. ~~See Table 4.2 Micronutrients.~~	●		The listing has been modified to have a consistent format with other micronutrient listings including expanding the requirement to demonstrate soil deficiency. It now identifies the specific sources and forms of the micronutrient that are not permitted.
Mulches	Biological materials from organic sources are permitted (e.g., straw, leaves, grass clippings, hay, wool or untreated burlap). If organic materials are not commercially available, non-organic, non-genetically engineered sources may be used provided that prohibited substances have not been used on these materials for at least 60 days before harvest. Prohibited mulch material includes, but is not limited to, sawdust, wood chips, bark and shavings that is treated or processed with Formulants used in crop production aids or with substances, such as herbicides, preservatives and glues, not listed in Table 4.2 (Column 1 or 2). Newspaper and paper mulch are permitted; glossy paper and coloured ink are prohibited. Plastic mulches: Non-biodegradable and semi-biodegradable materials shall not be incorporated into the soil or left in the field to decompose. Use of polyvinyl chloride as plastic mulch or row cover is prohibited. Biodegradable mulches: 100% of biodegradable mulch films shall be derived from bio-based sources. Formulants or ingredients shall be listed	●	●	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	in Table 4.2 (Column 1 or 2). Biodegradable polymers and Carbon Black from GE or petroleum sources are not permitted.			
Mushroom compost	See Table 4.2 Compost.	●		
[NEW] Ozonated water	Water saturated with ozone gas. For control of microbial pathogens in crops as a foliar application. Neither the ozonated water nor the gas is permitted for the control of weeds or soil fumigation.		●	Ozonated water was added because it has been shown to be effective for the control of powdery mildew and has a low environmental risk. It degrades to oxygen with no residues or negative impact to the environment.
Nitrogen gas	For controlled atmosphere storage.		●	
Non-ionizing radiation	May be used to manage pest load		●	The definition of irradiation in CAN/CGSB-32.310 (Clause 3) is being updated to clearly distinguish between ionizing and non-ionizing radiation by specifying the wavelength threshold where ionizing radiation begins. Ionizing radiation, which alters DNA or chemical structure, remains prohibited. At the same time, this standard explicitly recognizes that non-ionizing technologies, such as ultraviolet (UV) treatments, can be used for pest and pathogen management on crops and food-contact surfaces. This improved clarity will help address ambiguities and ensure precise understanding of the use of these

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
				radiation technologies permitted within organic production.
Oilseed meals	Shall be organic if commercially available.	●		
Oxygen	For controlled atmosphere storage.		●	
Peat moss		●		
Peracetic (peroxyacetic) acid	Formulations of peracetic acid may include unreacted residual reagents and catalysts, such as hydrogen peroxide, acetic acid and sulphuric acid. Permitted for: a) pest control; and b) disinfecting and cleaning seeds and plant stock. See Table 7.3.		●	
Pheromones and other semiochemicals	All sources are permitted. For pest control.		●	
Phosphate rock	May be fortified or processed with substances listed in Table 4.2 (Column 1) with the exception that treatment with acid prior to application is not permitted. Cadmium shall not exceed 90 mg/kg P_2O_5.	●		The use of soluble nutrients is contrary to soil building as the foundation of nutrient management. The listing has been modified to eliminate treatment with acid which causes a chemical reaction that renders the macronutrient soluble. See "Phosphorus on organic farms: from struvite to peecycling" https://mailchi.mp/organicfederation/phosphorestruvite-11037816

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Plant material ~~by-products and plants~~	~~Includes plant preparations of aquatic~~ Aquatic or terrestrial ~~plants or parts of plants, such as~~ plant biomass including cover crops, green manures, crop wastes, hay, straw, leaves, peat, forestry by-products, hulls and ~~straw. Parts of plants used as soil amendments and foliar feeds are~~ grain screenings. Does not include plant-based food products or by-products of food processing (including fermentation, chemical treatment, or resulting concentrated nutrient extracts) such as corn steep liquor. Such products may be permitted under separate listings in Table 4.2; see Oilseed meal, Plant extracts, oils and preparations, Molasses, Pomaces, Cannery waste, Lignin and lignin sulphonates, etc. Wastes from crops that have been treated or produced with prohibited substances are permitted as compost feedstocks~~.~~ only (subject to Compost feedstock restrictions). ~~For processing of plant by-products, see Table 4.2 Extractants.~~ Prohibited ~~substances~~ plant materials include sawdust, wood chips, bark and shavings that are treated or processed with Formulants used in crop production aids or with substances, such as herbicides, preservatives and glues, not listed in Table 4.2 (Column 1 or 2).	●		The 2020 "Plant by-products and plants" listing in Table 4.2 is ambiguous and unintentionally may have permitted the use of various processed plant by-products. The listing is intended to refer to simple crop/plant materials NOT processed products. The word "by-products" was removed from the substance name and the annotation revised to provide more clarity. No change was made to the restriction that crop wastes need to be composted if treated or produced with prohibited substances.
Plant extracts, oils and preparations	Permitted extractants include fats and oils (such as cocoa butter, lanolin and animal fats); alcohols; water; or substances listed on Table 4.2 (Column 2) other than Formulants used in crop production aids. Extraction with other solvents is prohibited except with, in order of preference: a) potassium hydroxide; or		●	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	b) sodium hydroxide; provided the amount of solvent used does not exceed the amount necessary for extraction. The operator shall provide an affidavit from the manufacturer that proves the need to use sodium hydroxide. For control of pests (e.g., diseases, weeds and insects). Clove oil is permitted for sprout inhibition in potatoes.			
Plant protectants	Mineral and biological substances including, but not limited to: calcium carbonate (from chalk, limestone, etc.); diatomaceous earth; kaolin clay; pine oil; pine resin; and yucca. White wash (solution of hydrated limestone) is permitted for use on trees to protect against sunburn and southwest disease. Permitted to protect plants from harsh environmental conditions (such as frost and sunburn), infection, the build-up of dirt on leaf surfaces, or injury by an invertebrate pest or disease.		•	
Plastic for row covers and solarization	Non-biodegradable and semi-biodegradable materials shall not be incorporated into the soil or left in the field to decompose. Use of polyvinyl chloride as plastic mulch or row cover is prohibited.		•	
[NEW] Polyoxin D zinc salt			•	The substance was added because it is a crop protectant (anti-fungal agent) which has a low environmental impact.
Pomaces	Feedstocks shall be from organically grown fruits or vegetables. Non-organic pomaces shall be composted. See Table 4.2 Compost feedstocks.	•		
Potassium	The following potassium sources are permitted:	•		

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	a) mined potassium magnesium sulphate (langbeinite) and mined potassium magnesium chlorides (sylvinite and kainite); b) potassium rock powder—includes basalt, biotite, mica, feldspar, granite, glauconite and greensand; c) potassium chloride—muriate of potash or rock potash. The use of potassium chloride shall not cause salt build-up in soil through repeated application; d) potassium sulphate—shall be produced by evaporating brines from seabed deposits or combining mined minerals using ion exchange. Potassium sulphate made using sulphuric acid as a reactant is prohibited.			
Potassium bicarbonate	For pest and disease control for crops grown in greenhouses and other structures, and for other crops.		•	
Pyrethrum	May be combined with Formulants used in crop production aids. See Table 4.2 Botanical pesticides for restrictions.		•	
Quicklime (calcium oxide)	Shall not be used as a fertilizer or as a soil amendment.		•	
Repellents	Shall be derived from biological sources, such as sterilized blood meal, rotten eggs, hair or predator scents. May contain substances listed in Table 4.2 Column 2.		•	
Salt	Sodium chloride, calcium chloride or potassium chloride; shall be mined or derived from sources of natural brine. The effluent from ion exchange water softener regeneration may be used. For pest control.		•	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Seaweed and seaweed products	See Table 4.2 Aquatic plants and aquatic plant products.	●	●	
[NEW] Seed lubricant	Talc and graphite are permitted.		●	Graphite and/or talc-based seed lubricants are dry lubricants that are needed in the operation of seeders and are currently approved via the 'Mined minerals, unprocessed' listing. Creating a specific listing clarifies the fact that these seed lubricants are permitted. Although some graphite used in seed lubricants could be derived from recycling of graphite in electrodes, the contamination risk is inconsequential.
Seed treatments	Includes microbial products, kelp, yucca, gypsum, clays and botanicals. May contain substances listed in Table 4.2 (Column 1 or 2) or Table 7.3. See Table 4.2 Peracetic Acid; Treated Seeds and refer to CAN/CGSB-32.310, 5.3.2. Sodium hypochlorite 2.5 % solution may be used to disinfect Solanaceae seeds.		●	The listing was modified to permit sodium chloride as a disinfectant for seed threatened by the Tomato Rough Brown Fruit Virus, which can affect all members of the Solanaceae family.
[NEW] Selenium	Sodium selenate and sodium selenite may be used when: (1) soil and plant deficiencies are documented by visual symptoms, (2) testing of soil or plant tissue indicates deficiencies, or (3) when the need for a preventative application to maintain plant, animal or human health can be documented.	●		The Micronutrients listing prior to 2020 permitted both selenium and cobalt. COS 2020 added a definitive list of plant essential nutrients eliminating the use of both of these beneficial micronutrients. The list of micronutrients has been replaced by individual listings.

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Shell from aquatic animals	Includes chitin.	●	●	
Silicic acids, including potassium and sodium salts of silicic acid ~~Silicon, silica and silicates~~	Includes potassium and sodium silicates (and associated hydrates) and silicic acids such as monosilicic acid. May be pH adjusted with sodium or potassium hydroxide, or with acids listed in table 4.2. Formulations shall not contain more than 0.1% P2O5 and not more than 0.1% N. For unprocessed silicon minerals, such as Wollastonite, see Table 4.2 Mined minerals, unprocessed. ~~Silicon products from mined sources such as diatomaceous earth, calcium silicate from wollastonite, or silicon dioxide (quartz). Sodium and potassium silicates are permitted only for Crop protection (Table 4.2 Column 2).~~ ~~See Table 4.2 Diatomaceous earth.~~	[cut dot]	●	This new listing for synthetic silicates (permitted only as crop production aids (column 2)) has been created to separate synthetic sodium and potassium silicates from the permitted mined sources (column 1) of the Silicon, silica and silicates. Silicic acid formulations are permitted. Silicic acid is understood to have a crop protection effect in response to stresses such as drought and fungal disease. Allowing its use will provide another pest management tool for operators. The annotation also restricts levels of potassium and nitrogen to discourage overuse of pH adjusters. These limits serve as testable criteria as a tool for assessment of compliance and the prevention of unpermitted fortification thereby ensuring organic integrity. The creation of this synthetic silica listing led to the elimination of the Silicon, silica and silicates listing. These natural forms of silicon remain permitted as they are included in the “Mined minerals, unprocessed” listing.
Soaps	Soaps (including insecticidal soaps) shall consist of fatty acids derived from animal or vegetable oils.		●	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Soaps, ammonium	As a large animal repellent. Direct contact with soil or edible portion of crop is prohibited.		●	
Sodium bicarbonate	For pest and disease control for crops grown in greenhouses and other structures, and for other crops.		●	
Soil	From organic sources. Shall comply with restrictions specified in 5.1.2 of CAN/CGSB-32.310. See definition of Soil in Clause 3 of CAN/CGSB-32.310. For soils used in containers, see Transplant media, potting soil and potting media.	●		
Sphagnum moss	May contain wetting agents listed in Table 4.2 Surfactants.	●		
~~Stillage and stillage extract~~	~~Ammonium stillage is prohibited.~~	●		Replaced by more precise substances such as Distillers' grains and solubles and Brewers' grains and solubles and Condensed molasses fermentation solubles.
Struvite (magnesium ammonium phosphate)	~~Allowed if made from biological sources, including plant and plant by-products or livestock manures. Prohibited if made from sewage sludge. All sources of magnesium are permitted in the manufacturing process. Levels (mg/kg) of arsenic, cadmium, chromium, lead and mercury shall not exceed the limits (category C1) specified in *Guidelines for the Beneficial Use of Fertilising Residuals.* Shall not cause a build-up of heavy metals or micronutrients in soil.~~ Obtained through precipitation from one or more of the following: a) liquid animal manure as described in CAN/CGSB-32.311 Table 4.2 (Column 1) Animal Manure, unprocessed	●		The change permits the use of struvite that has been recovered from more sources including municipal wastewater. As of March 2025, there are no sources of struvite in Canada that have been precipitated from liquid animal manure (the only type of struvite permitted in 2020). The only source of struvite is from the municipal waste stream source. The

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	and in 5.5.1 of CAN/CGSB-32.310; b) anaerobic digestate as described in Table 4.2 (Column 1); c) liquid waste from the processing of foods, beverages, pet foods or animal feeds; d) wastes from the processing of ethanol or biodiesel from plant-based agricultural feedstocks; e) municipal wastewater that has undergone advanced treatment processes/systems capable of reducing impurities to levels below those attainable through conventional secondary or biological treatment. The type of wastewater stream and exact location(s) of the wastewater facilities shall be documented. May contain incidental precipitated phosphate salts. Struvite products shall contain: a) a phosphorus content (expressed as P2O5) between 25% and 30% (dry matter basis) b) a maximum organic carbon content of 1.5% (dry matter basis) c) a nitrogen content between 4% and 6% (dry matter basis) d) a magnesium content (expressed as Mg) between 8% and 11% (dry matter basis)			hope is that struvite from multiple sources will eventually become available. Permitting struvite from municipal wastewater provides a source of phosphorus - which is greatly needed for alkaline P-deficient soils (alkalinity inhibits plant uptake of phosphate from many natural sources). The definition of sewage sludge (in Clause 3 of Can/CGSB-32.310) has been modified to permit struvite extracted from wastewater. It is reasonable to distinguish sewage sludge (biosolids), which are prohibited, from the wastewater that has undergone advanced treatment (this is what the commercially available struvite is extracted from). Struvite recovered from municipal wastewater is now approved for organic use in the EU. This decision was made after extensive study by the Expert Group for Technical Advice on Organic Production and the EU general fertilizer commission, which found this form of struvite to be safe for humans, animals and the environment (subject to purity restrictions). The proposed listing in the Canadian Permitted Substance Lists exceeds the purity standards laid down in EU rules. See here https://mailchi.mp/organicfederation/pho

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
	Derivatives from struvite are prohibited. Shall not exceed the maximum acceptable levels of arsenic, cadmium, chromium, lead and mercury (mg/kg) and foreign matter outlined for unrestricted use compost (Category A), as specified in *Guidelines for Compost Quality*. Shall not cause a build-up of heavy metals or micronutrients in soil. Shall meet criteria for acceptable levels (MPN/g total solids) of human pathogens as specified in *Guidelines for Compost Quality*. Total aluminum shall not exceed 0.1% (dry matter basis). Total Iron shall not exceed 1% (dry matter basis). Shall have no more than 6mg/kg of any substance classified as a PAH (polycyclic aromatic hydrocarbon) as defined in the *Toxic Substances List (schedule 1)* of the *Canadian Environmental Protection Act (1999).* For the evaluation of heavy metals, aluminium, iron and PAHs, struvite shall be measured using vacuum drying at 40°C until constant weight to avoid the loss of crystal-bound water.			sphorestruvite-11037816 for an article on struvite and here https://mailchi.mp/organicfederation/phosphorestruvite-11037816 for an article on Phosphorus on organic farms: from struvite to peecycling.
Sugars	Organic sugars (e.g., sucrose, glucose, fructose) are permitted.	●	●	
Sulphur smoke bombs	Use of sulphur smoke bombs shall be permitted in conjunction with other methods used for rodent control when a full pest control program is maintained but temporarily overwhelmed.		●	
Sulphur, elemental	Both mined and reclaimed sources of elemental sulphur are permitted.	●	●	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Summer oils	On foliage, as suffocating or stylet oils.		●	
Surfactants	Includes plant-derived saponins, such as *Yucca schidigera* and *Quillaja saponaria*, or substances listed in Table 4.2 Formulants used in soil amendments; Formulants used in crop production aids; Soaps.	●	●	
Transplant media, potting soil and potting media	Shall be composed entirely of permitted substances listed in Table 4.2 (Column 1 or 2). Soil from the field may be used provided that prohibited substances have not been used on the soil for at least 36 months.	●		
Treated seed	See Table 4.2 Peracetic acid; Seed treatments and refer to CAN/CGSB-32.310, 5.3.2.		●	
Tree seals	Plant or milk-based paints are permitted. May only be combined with substances listed in Table 4.2 (Column 1 or 2). See Table 4.2 Plant Protectants. For planting stock: commercial grafting materials are permitted, provided that plants are maintained in accordance with requirements of CAN/CGSB-32.310 for at least 12 months prior to harvest of organic products.		●	
Vermicasts	See Table 4.2 Worm castings.	●		
Vermiculite		●		
Vinegar (acetic acid)	See Table 4.2 Acetic acid.		●	
Vitamins	Biological and mineral sources of all vitamins are permitted. Non-biological and non-mineral sources of vitamins B_1, C (ascorbic acid) and E are permitted.	●	●	

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Water		●	●	
Water, recycled	Recycled water shall only contain substances listed in Tables 4.2 (Column 1 or 2), 7.3 and 7.4. Recycled wash water from all organic operations, including dairy operations, may be spread on crop lands. Requirements for land application, as specified in 5.5.2.5 of CAN/CGSB-32.310, shall be met. In all other uses, recycled water shall meet applicable irrigation water regulatory requirements.	●	●	
Wetting agents	See Table 4.2 Surfactants.	●	●	
Wood ash	See Table 4.2 Ash.	●	●	
Worm castings	Worm castings (also called vermicompost, worm compost, vermicasts, worm humus or worm manure) are the end product of the breakdown of organic matter and compounds by some earthworm species. Feedstocks for earthworms shall meet the criteria in Table 4.2 Compost feedstocks. The operator shall be able to demonstrate that: a) worm castings produced either on the farm or obtained from off-farm sources meet the limits for acceptable levels (MPN/g total solids) of human pathogens as specified in *Guidelines for Compost Quality;* or b) best practices known to eliminate human pathogens during vermicomposting have been used. See Table 4.2 Microorganisms and microbial products for information on compost starters.	●		

Table 4.2 – Substances for crop production. Column 1: Soil amendments and crop nutrition, Column 2: Crop production aids and materials.

Substance name(s)	Origin and usage	1	2	Rationale
Yeast	See Table 4.2 Microorganisms and microbial products.	●		
Zinc	Sulphates, oxides, oxysulphates, carbonates, chlorides, citrates, lignosulphonates or permitted chelates of zinc may be used when soil and plant deficiencies are documented by visual symptoms or by testing soil or plant tissue, or when the need for a preventative application can be documented. Nitrates, hydroxides, amino acid chelates, synthetic chelates, ammonia-manganese complexes and polyphosphates are not permitted. ~~See Table 4.2 Micronutrients.~~	●		The listing has been modified to have a consistent format with other micronutrient listings including expanding the requirement to demonstrate soil deficiency. It now identifies the specific sources and forms of the micronutrient that are not permitted.

5 Permitted substances lists for livestock production

5.1	Classification	Rationale
5.1.1	Livestock production substances are classified according to the following uses and applications:	
a	Feed, feed additives and feed supplements;	
b	Health care products and production aids — Health care products include medications, remedies, parasiticides and other substances used to maintain or restore the well-being of an animal.	

	Production aids include all other substances used on animals and their living areas, such as bedding, teat seals and teat dips.	
5.1.2	Substances listed in Tables 5.2 and 5.3 shall comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310. The following additional requirements apply to substances produced on substrates or growth media (for example, microorganisms and lactic acid):	
a	if the substance includes the substrate or growth media, the substrate or growth media ingredients shall be listed in Table 5.2 or 5.3*;*	
b	if the substance does not include the substrates or growth media, the substance shall be produced on non-genetically engineered substrates or growth media, if commercially available.	
NOTE	In Canada, livestock feed must meet the compositional and labelling standards of the *Feeds Regulations*, 1983. Ingredients used in livestock feed must be approved and listed in Schedule IV or V of the *Feeds Regulations*, 1983. Some ingredients and products require registration (such as enzymes and milk replacers).	

Table 5.2 – Feed, feed additives and feed supplements

Table 5.2 – Feed, feed additives and feed supplements

Substance name(s)	Origin and usage	Rationale
Amino acids	~~Organic sources, such as fishmeal, insect meal, brewer's yeast, potato protein, corn gluten and distillers' grains, shall be the first preference.~~ When organic protein feeds and non-organic feed additives that are listed in Table 5.2 cannot ~~the supplementation with these organic sources does not~~ meet amino acid requirements to produce a balanced feed as per 6.4.1 and 6.4.2 of CAN/CGSB-32.310, ~~then:~~ ~~a) amino acids derived from biological sources by biofermentation and extracted, or isolated, by hydrolysis or by physical or other non-chemical means may be used; b) when such forms of lysine and methionine are not commercially available for use in monogastrics feeding,~~ as an exception to 5.1.2 (CAN/CGSB-32.311) and 1.4 a) of CAN/CGSB-32.310, isolated amino acids ~~all sources of lysine and methionine~~ may be used. ~~This annotation will be reviewed at the next revision of the standard. See Table 5.2 Fishmeal.~~	Isolated amino acids will be permitted in organic livestock feeds in the quantities required for a balanced diet. Isolated amino acids are necessary components of livestock diets to keep the animals in good health. Having low amounts of amino acids would create a problem with animal welfare. All isolated amino acids are used by exception since they are usually produced by GE bacteria via fermentation. Methionine production usually does not involve GE bacteria, but is produced by chemical synthesis. The 2020 COS required a review of the amino acid annotation and the review team considered adding limits for each amino acid in terms of kgs per tonne of feed over the animal's lifetime. The team concluded that isolated amino acids are unlikely to be overused as they are expensive and the animals require a specific amount in their diet (not higher or lower). Furthermore, in 2024, the US NOP changed its approach and will no longer limit methionine because of the potential negative health impacts of such limits on poultry, and because no organic alternatives are available or emerging.

Table 5.2 – Feed, feed additives and feed supplements

Substance name(s)	Origin and usage	Rationale
Antioxidants	Derived from materials produced by living organisms (such as, but not limited to, plants, animals and microorganisms) using substances listed in Table 6.3 Extraction solvents and precipitation aids. Example: tocopherols derived from plants.	
Colouring agents	From biological sources.	
Diatomaceous earth	As a preventative livestock health care practice for control of internal parasites, and as an anti-caking agent. Shall be food grade (non-calcined). As free choice, or up to 2% of total diet, or as an anti-caking agent in feed ration.	
Energy feeds and forage concentrates (grains) and roughages (hay, silage, fodder, straw)	Shall be obtained from organic sources. May include silage preservation products. See Table 5.2 Hay or silage preservation products.	See Palm oil https://mailchi.mp/organicfederation/tcmtg-diverseschanges
Enzymes	Derived from plants, animals or microorganisms. Examples include, but are not limited to, bromelain, bovine liver catalase, ficin, animal lipase, malt, pancreatin, pepsin, trypsin, proteases and carbohydrases. Animal-derived enzymes shall be free of Specified Risk Material (SRM). This annotation will be reviewed at the next revision of the standard. See Table 5.2 Phytase.	
Fishmeal	Shall be organic if commercially available. All preservatives and other ingredients shall be listed in Table 5.2.	Although organic fish meal is not currently readily available, the change was made in the expectation that it may be more available in the near future.

Table 5.2 – Feed, feed additives and feed supplements

Substance name(s)	Origin and usage	Rationale
Flavours	Shall be organic.	
Food waste	Organic food for human consumption or by-products from organic food production (excluding abattoir waste).	
Hay or silage preservation products	Preference should be given to bacterial or enzymatic additives derived from bacteria, fungi and plants and food by-products (such as molasses and whey). The following acids may be used: lactic, propionic and formic.	
[NEW] Mammalian or avian slaughter by-products	From organic sources and guaranteed free of Specified Risk Materials (SRM). Shall be used only to feed insects.	The CFIA has not yet established a clear enforcement on safety issues related to insects as feed or food, however this will be implemented soon. If the insect feed might contain SRM, the onus is on the producer to show the final insect product is safe for feed for food. A careful consideration of the entire process of rearing insects should identify any potential contaminants that may be inherent in the insects, the growth substrate or introduced via production and processing steps.
[NEW] Manure or other animal waste	Sourced from organic livestock operations. Shall be used only as a component of feed formulas for insects.	
Microorganisms and yeasts	If organic sources of yeast are not commercially available, non-organic yeast sources, including yeast autolysate, shall be used.	
Milk replacer	Shall be organic if commercially available. Permitted for emergency use. Without antibiotics and animal fats or by-products.	

Table 5.2 – Feed, feed additives and feed supplements

Substance name(s)	Origin and usage	Rationale
Minerals, trace minerals, elements	Unprocessed rock dusts; ground animal or plant material (other than blood or bone meal); and seawater are preferred sources. Chelated and sulphated forms are permitted. If none of the aforementioned sources are commercially available, other versions are permitted except for forms containing or produced with EDTA or EDDHA.	
Molasses	Shall be organic.	
Phytase	Permitted when feed supplementation with phytase is recommended to reduce the phosphorus level in manure and thereby reduce the potential environmental consequence. As an exception, GE-derived sources of phytase are allowed even though they are not compliant to 5.1.2 of CAN/CGSB-32.311 or 1.4 a) of CAN/CGSB-32.310. This substance and annotation will be reviewed at the next revision of the standard.	
Pre-mixes	Concentrated mixture of minerals and vitamins. From organic sources if commercially available. All ingredients in pre-mixes shall be essential for animal nutrition, and listed in Table 5.2. Non-GE fillers, for example rice hulls, may be non-organic.	
Probiotics	Probiotics may be administered orally, as dietary supplements, via pharmaceutical preparations in the form of capsules, tablets, alginate gels, or dry powder.	
Protein feeds	Shall be from organic sources.	

Table 5.2 – Feed, feed additives and feed supplements

Substance name(s)	Origin and usage	Rationale
Seaweed meal	Shall be organic if commercially available (to be reviewed in 2030).	There are some certified organic sources, but there are many other seaweed producers/harvesters who are not certifying their product as organic (for livestock feed) simply because it is not required by Table 5.2. Seaweed is more often certified organic when it is going to be used as a crop input. It is logical to move towards requiring certified organic seaweed for livestock feed because the capacity for such a product exists and there is no substantial hurdle to certify these products. To mitigate any negative impacts of this change on producers and suppliers, a commercial availability clause is included, with the requirement to review if the commercial availability clause will still be necessary by 2030.
Vitamins	Permitted for enrichment or fortification. Vitamin formulants that comply with Canadian regulations are accepted, including those containing non-organic agricultural carriers. Vitamins not compliant to 5.1.2 of CAN/CGSB-32.311 are permitted.	Carriers are needed because vitamins are added in very tiny quantities that must be distributed evenly in the feed, and some carriers are not organically acceptable as they are nanoparticles. The ~~i~~ntent of the vitamin listing is to permit any source of vitamin because of their necessity in animal diets, the small amounts added, and the methods of producing the vitamins.

Table 5.3 – Health care products and production aids

Table 5.3 – Health care products and production aids

Substance name(s)	**Origin and usage**	**Rationale**
Acetylsalicylic acid	Aspirin.	
Acids	Ascorbic, acetic, propionic, citric, formic and lactic acids and vinegar. Permitted for all uses such as treatment of water and bedding.	
Activated charcoal	Shall be of plant origin.	
Alcohol, ethyl (ethanol)	Permitted as a disinfectant and sanitizer.	
Alcohol, isopropyl	Permitted as a disinfectant.	
Antibiotics	See 6.6 of CAN/CGSB-32.310, for conditions pertaining to antibiotic use in livestock. See Table 5.3 Antibiotics, oxytetracycline.	
Antibiotics, oxytetracycline	For emergency use for bees. The equipment shall be destroyed in accordance with 7.1.15.7 of CAN/CGSB-32.310; treated bees do not need to be destroyed if they are taken out of organic production.	
Anti-inflammatories	Non-steroid anti-inflammatories such as ketoprofen. Preference shall be given to alternative products, such as those listed in Table 5.3, Botanical compounds; and Homeopathy and biotherapies. To reduce inflammation. See 6.6.4 c) 2) of CAN/CGSB-32.310.	
Biologics		
Botanical compounds	Botanical preparations, such as atropine, butorphanol and other medicines from herbaceous plants shall be used according to label specifications. Substances containing petroleum-derived formulants, such as propylene glycol, shall not be fed to livestock.	

Table 5.3 – Health care products and production aids

Substance name(s)	**Origin and usage**	**Rationale**
Calcium borogluconate	For milk fever. No withdrawal period required.	
Chlorhexidine	For surgical procedures conducted by a veterinarian. To be used as a post-milking teat dip when alternative germicidal agents and physical barriers have lost their effectiveness. See Table 5.3 Teat dips and udder wash.	
Colostral whey	Probiotic.	
Colostrum	Shall be organic if commercially available.	
Copper sulphate	As an essential nutrient (source of copper and sulphur) and for topical use (foot baths).	
Diatomaceous earth	For use in control of external parasites and as a preventative practice for control of internal parasites. For internal use, diatomaceous earth shall be food grade (non-calcined).	
Electrolytes	Including, but not limited to: CMPK (Calcium, Magnesium, Phosphorus, Potassium), calcium propionate and calcium sulphate. Shall not contain antibiotics. Orally or by injection.	

Table 5.3 – Health care products and production aids

Substance name(s)	**Origin and usage**	**Rationale**
Formic acid	For apicultural use, to control parasitic mites. The use of this substance ~~may be used after the last honey harvest of the season and~~ shall be discontinued ~~30 days before the addition of honey supers~~14 days before harvesting the hive products.	Many beekeepers treat hives with formic acid several times during the beekeeping season in order to control varroa mites, and thereby keep the colony alive. Health Canada states that "Maximum residue limits (MRLs) are not required for formic acid." Non-synthetic formic acid can be found in nature; it causes the sting from ants and stinging nettles, and can even be found at low concentrations in wild honey.
Formulants (inerts, excipients)	Shall be used in conjunction with substances listed in Table 5.3. Formulants are not subject to 1.4 or 1.5 of CAN/CGSB-32.310 or 5.1.2 of this standard.	
Glucose		
Glycerol (glycerine, glycerin)	Shall be from organic sources if commercially available. Shall be from vegetable oil or animal fat. Shall be produced using fermentation or by hydrolysis.	
Homeopathy and biotherapies		
Honey	Shall be organic.	
Hydrated lime (calcium hydroxide)	Shall not be used to deodorize animal wastes.	

Table 5.3 – Health care products and production aids

Substance name(s)	**Origin and usage**	**Rationale**
Hydrogen peroxide	Pharmaceutical grade hydrogen peroxide is permitted for external use (disinfectant). Food-grade hydrogen peroxide is permitted for internal use (for example, added to livestock drinking water).	
Iodine	If used as a topical disinfectant: permitted iodine sources include potassium iodide and elemental iodine. If used as a cleaning agent: non-elemental iodine shall be used; iodine shall not exceed 5% solution by volume (example: iodophors). Use shall be followed by a hot-water rinse.	
Iron products	May be supplied by ferric phosphate, ferric pyrophosphate, ferrous lactate, ferrous sulphate, iron carbonate, iron gluconate, iron oxide, iron phosphate, iron sulphate or reduced iron.	
Lanolin	For external use only, such as udder balm (ointment).	
Local anesthetics	Such as lidocaine. Use of pharmaceutical local anesthetics shall be followed by withdrawal periods of 90 days for livestock intended for slaughter, and seven days for dairy animals. Preference shall be given to alternatives, such as clove oil, listed in Table 5.3 Botanical compounds; Homeopathy and biotherapies.	
Magnesium sulphate	Mined sources. A source of magnesium and sulphur.	
Mineral oil	For external use.	

Table 5.3 – Health care products and production aids

Substance name(s)	**Origin and usage**	**Rationale**
Minerals, trace minerals, elements	Non-synthetic chelated or sulphated minerals. Examples include oyster shell, calcium chloride and magnesium oxide. Synthetic nutrient minerals may be used if non-synthetic sources are not commercially available. Minerals from any source are permitted for medical use.	
Microorganisms and yeasts	If organic sources of yeast are not commercially available, non-organic yeast sources derived from living yeast, including yeast autolysate, shall be used.	
Oxalic acid	For mite control in honeybee colonies.	
Oxytocin	For post-parturition therapeutic use. Meat from treated animals will not lose its organic status. See 6.6.10 d) of CAN/CGSB-32.310, for criteria pertaining to the mandatory withdrawal period.	
Paraffin	Shall be food-grade. For use in hives.	
Parasiticides and anti-microbials	Shall respect requirements set out in 6.6 of CAN/CGSB-32.310 with regard to the use of internal parasiticides.	
Physical teat seals	All sources are permitted. Shall be free from antibiotics. For post-lactation use. Shall be completely removed prior to nursing or milking. Shall be prescribed and administered under veterinary supervision.	
Plant oils	To control external parasites.	

Table 5.3 – Health care products and production aids

Substance name(s)	**Origin and usage**	**Rationale**
Prebiotics	From organic sources if commercially available.	
Probiotics	Probiotics may be administered orally, as dietary supplements, via pharmaceutical preparations in the form of capsules, tablets, alginate gels, or dry powder.	
Propylene glycol	May only be used as an ingredient in foot baths.	
Sedatives	Such as xylazine.	
Selenium products	Derived from sodium selenate or sodium selenite. May be used to address documented deficiencies in the stock, soils or feed supplies. See Table 5.3 Minerals, trace minerals, elements.	
Sodium hydroxide	For use in dehorning paste. See 6.4 of CAN/CGSB 32.310.	
Sulphur	For control of external parasites.	
Teat dips and udder wash	Substances, such as alcohol, iodine, hydrogen peroxide, chlorine dioxide and ozone, can be used as disinfectants for a pre- or post-teat dip or udder wash if they are registered for this use by Canada's *Food and Drug Regulations*. Chlorhexidine can be used as a post-milking teat dip if alternative germicidal agents and physical barriers have lost their effectiveness. See Table 5.3 Chlorhexidine.	
Thymol	See Table 5.3 Botanical compounds for thymol derived from botanical sources. Thymol that is not derived from botanical sources may only be used in foot baths.	

Table 5.3 – Health care products and production aids

Substance name(s)	**Origin and usage**	**Rationale**
Vaccines	Vaccines may be used in prevention of diseases. If vaccines compliant to 5.1.2 of this standard are not commercially available, or are ineffective, vaccines not compliant to 5.1.2 are permitted.	
Vitamins	Vitamin formulants that comply with Canadian regulations are accepted. Vitamins not compliant to 5.1.2 of this standard are permitted. Orally, topically or by injection.	

6 Permitted substances lists for preparation

		Rationale
6.1	**Classification**	
6.1.1	Processing substances are classified according to the following uses and applications:	
a	Food additives (see definition in clause 3 of CAN/CGSB-32.310);	
b	Other ingredients not considered to be food additives;	
c	Processing aids (see definition in clause 3 of CAN/CGSB-32.310).	
6.2	**Restrictions**	
6.2.1	Substances listed in Tables 6.3, 6.4 and 6.5 shall comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310. The following additional requirements apply to substances produced on substrates or growth media (for example, microorganisms and lactic acid):	
a	if the substance includes the substrates or growth media, the substrates or growth media ingredients shall be listed in Table 6.3, 6.4 or 6.5;	
b	if the substance does not include the substrates or growth media, the substance shall be produced on non-genetically engineered substrates or growth media, if commercially available.	
6.2.2	Organic commercial availability requirements specified in the substance listing annotations of Tables 6.3, 6.4 or 6.5 apply to substances used in products composed of 95% or more organic content.	
6.2.3	Other commercial availability requirements specified in the substance listing annotations of Tables 6.3, 6.4 or 6.5 apply to substances used in organic products composed of 70% or more organic content.	

Table 6.3 – Ingredients classified as food additives

Table 6.3 – Ingredients classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Acids	Including the following sources: a) alginic; b) citric—from fruit and vegetable products or produced by microbial fermentation of carbohydrate substances; and c) lactic.	
Activated charcoal	Shall be of plant origin. Prohibited for use in the production of maple syrup.	
Agar	See Table 6.3 Extraction solvents and precipitation aids.	
Alginates	The following alginates are permitted: a) alginic acid; b) potassium alginate; and c) sodium alginate.	
Ammonium bicarbonate	As a leavening agent.	
Ammonium carbonate	As a leavening agent.	
Argon		
Ascorbic acid (vitamin C)		
Calcium carbonate	Prohibited for use as a colouring agent.	

Table 6.3 – Ingredients classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Calcium chloride	Permitted for: a) milk products; b) fat products; c) soybean products; d) fruits and vegetables: and e) beer brewing to adjust calcium level.	Adding beer to an existing annotation was done with minimal hesitation because when this listing was created it focused exclusively on food production and did not consider alcohol production.
Calcium citrate		
Calcium phosphates (mono-, di-, and tri-basic forms)		
Calcium sulphate (gypsum)	Mined sources; calcium sulphate produced using sulphuric acid is prohibited.	
Carbon dioxide (CO_2)	Carbonation of wine or mead is prohibited.	
Carrageenan (Irish moss)	Shall be derived using substances listed in Table 6.3 Extraction solvents and precipitation aids. By exception, isopropyl alcohol may be used to derive carrageenan.	
Carriers	Carriers of non-agricultural origin may be used if listed on Tables 6.3, 6.4 or 6.5. Non-organic carriers of agricultural origin (such as wheat starch) may be used if ingredients or processing aids containing organic carriers are not commercially available.	

Table 6.3 – Ingredients classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Colouring agents	From biological sources such as spices, annatto, juices made from plant sources, etc. derived using approved methods (see Table ~~11~~ 12 B (1) & (2), Origin and mode of production of CAN/CGSB-32.310), and substances in Table 6.3 Extraction solvents and precipitation aids. May contain permitted carriers (see Table 6.3 & 6.4 Carriers).	Corrected reference.
[NEW] Dibasic ammonium phosphate (diammonium phosphate, DAP)	As a yeast and bacterial food for vinegar and alcohol production restricted to 0.3 g/L (0.04 oz/gal). Not to be added to a final vinegar or alcohol product.	The original listing was triggered specifically by the wine sector but has been revised to accommodate the broadest range of alcohol and vinegar fermentations possible.
Enzymes	The following sources of enzymes are permitted: a) any preparations of enzymes normally used in food processing derived from edible, non-toxic plants, non-pathogenic fungi or non-pathogenic bacteria; b) derived from animals—shall be organic if commercially available: rennet; catalase from bovine liver; animal lipase; pancreatin; pepsin; and trypsin. Animal-derived enzymes shall be free of Specified Risk Material (SRM); and c) egg white lysozyme.	

Table 6.3 – Ingredients classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Extraction solvents and precipitation aids	The following may be used to derive (extract) substances listed in Tables 5.2, 6.3, 6.4 and 6.5: a) water; b) culinary steam, as described in 8.1.2 b) of CAN/CGSB-32.310; c) fats, oils and alcohols other than isopropyl alcohol; d) supercritical CO_2; and e) substances listed in Tables 6.3, 6.4 or 6.5 of this standard. Precipitation aids derived from biological sources (such as plant proteins, albumin, casein, and gelatin) may also be used. In addition, non-biological precipitation aids, such as bentonite, silicon dioxide, etc., may be used if listed in Tables 6.3, 6.4 or 6.5. If listed in Tables 6.3, 6.4 or 6.5, precipitation aids shall meet any annotation restrictions therein.	
Gelatine	Shall be organic if commercially available. Gelatine may be sourced from: a) plants; or b) animals. If derived from cattle, gelatine shall be guaranteed free of Specified Risk Material (SRM).	
Glucono delta lactone	Production by the oxidation of D-glucose with bromine water is prohibited.	
Glycerides (mono- and diglycerides)	From organic sources if commercially available. For use in drum drying of products.	

Table 6.3 – Ingredients classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Glycerol (glycerine, glycerin)	Shall be from organic sources if commercially available. Shall be from vegetable oil or animal fat. Shall be produced using fermentation or by hydrolysis.	
Gums	The following gums are permitted: arabic gum, carob bean gum (locust bean gum), gellan gum, guar gum, karaya gum, tragacanth gum, and xanthan gum. Shall be derived using substances listed in Table 6.3 Extraction solvents and precipitation aids. By exception, isopropyl alcohol may also be used to derive gums.	
Kelp and kelp products	For use as a thickener and dietary supplement.	
Lecithin	Shall be organic if commercially available. The bleached form is permitted if processed using food-grade hydrogen peroxide.	
Magnesium carbonate	As an anti-caking agent in non-standardized dry mixes (e.g., seasonings) used in meat products with 70-95% organic content.	
Magnesium chloride	Derived from seawater.	
Magnesium stearate	For use as an anti-caking or releasing agent in products whose contents are ≥70% and <95% organic ingredients.	
Magnesium sulphate		
Malic acid		
Meat curing agents	Extracts, juice, or cultured powder of celery or chard are permitted. Shall be organic if commercially available.	

Table 6.3 – Ingredients classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Ozone		
Pectin	High-methoxyl and low-methoxyl pectin sources are permitted.	
Potassium acid tartrate ($KC_4H_5O_6$)	From grapes/wine-making.	
Potassium carbonates (mono- and bi-)		
Potassium chloride	From mined sources such as sylvite, carnalite, and potash. Refer to Potassium chloride in Table 6.4 regarding potassium chloride in vinegar and alcohol production.	This listing, along with the DAP listing, replaces the Yeast foods listing in Table 6.4.
Potassium citrate		
Potassium sulphite (bi-, meta-.forms) ~~metabisulphite~~	See Table 6.3 Sulphur dioxide, anhydrous (SO2).	Potassium bisulphite has some different functions than potassium metabisulphite in winemaking but mainly both stop the development of undesirable characteristics in the wine. It made sense to add this listing based on that logic but it is also good to know that potassium bisulphite is permitted in the EU organic standards for winemaking.
Potassium phosphate (mono-, di-, and tribasic forms)	For use in products whose contents are ≥70% and <95% organic ingredients.	

Table 6.3 – Ingredients classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Potassium tartrate ($K_2C_4H_4O_6$. INS 336)		
Silicon dioxide (silica)	No restrictions on sources or uses except for maple (see 7.2.12.6 of CAN/CGSB-32.310).	
Sodium acid pyrophosphate	For use as a leavening agent.	
Sodium bicarbonate (baking soda)		
Sodium carbonate (soda ash)	If biological or mined sources are not commercially available, synthetic forms are permitted.	
Sodium chloride		
Sodium citrate		
Sodium hydroxide (lye or caustic soda)		
Sodium phosphates	For use in dairy products.	

Table 6.3 – Ingredients classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Sulphur dioxide, anhydrous (SO_2)	Sulphites from SO2-bottled gas; as liquid SO2; or liberated from ignition of asbestos-free sulphur wicks are permitted. Sulphurous acid (aqueous sulphur dioxide), ~~and~~ Potassium bisulphite and potassium metabisulphite are also permitted. For use as a preservative in alcoholic beverages; minimal use of SO2 is recommended. Maximum allowable levels of SO2 in parts per million (ppm) are: a) in alcoholic beverages containing less than 5% residual sugar, 100 ppm and 30 ppm for total and free sulphites, respectively; b) in alcoholic beverages containing 5%-10% residual sugar, 150 ppm and 35 ppm for total and free sulphites, respectively; and c) in alcoholic beverages containing more than 10% residual sugar, 250 ppm and 45 ppm for total and free sulphites, respectively.	Potassium bisulphite has some different functions than potassium metabisulphite in winemaking but mainly both stop the development of undesirable characteristics in the wine. It made sense to add this listing based on that logic but it is also good to know that potassium bisulphite is permitted in the EU organic standards for winemaking.
Sulphurous acid	See Table 6.3 Sulphur dioxide, anhydrous (SO_2).	
Tartaric acid ($C_4H_6O_6$ INS 334)	From lees. For beverages.	
Tocopherols and mixed natural concentrates	Derived from vegetable oil when rosemary extract is not a suitable alternative.	

Table 6.3 – Ingredients classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Vegetable oils	Shall be organic if commercially available. Derived using substances listed in Table 6.3 Extraction solvents and precipitation aids. Maple syrup production—vegetable oils shall be organic and without allergenic potential.	
Waxes, produce	Organic beeswax and organic carnauba wax may be used to wax produce. See 9.2.1 d) of CAN/CGSB-32.310 if organic wax is commercially unavailable. For other wax uses, see Table 6.5 Waxes.	
Yeast	If organic sources of yeast are not commercially available, these alternative sources of yeast may be used: a) autolysate; b) bakers' (may contain lecithin, as listed in Table 6.3); c) brewers'; d) nutritional; and e) torula. Growth on petrochemical substrate and sulphite waste liquor is prohibited. Yeast may be smoked or smoke-flavoured. When smoked, the smoke shall come from concentrated, condensed smoke from wood without additional ingredients (unless listed in Tables 6.3, 6.4 or 6.5).	

Table 6.3 – Ingredients classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
~~Yeast foods~~	*[Delete the current "yeast foods" listing]* ~~Yeast foods: For use in alcoholic beverages:~~ ~~a) potassium chloride – permitted for ale, beer, light beer, malt liquor, porter and stout; and~~ ~~b) dibasic ammonium phosphate (diammonium phosphate, DAP), restricted to 0.3 g/L (0.04 oz/gal) – permitted for cider, mead and wine.~~ *[Instead add two separate listings for* Potassium chloride *and* Dibasic ammonium phosphate *in both 6.3 & 6.4 as follows]* ~~**Potassium chloride:** as yeast and bacterial food for vinegar and alcohol production.~~ ~~**Dibasic ammonium phosphate (diammonium phosphate, DAP):** as a yeast and bacterial food for vinegar and alcohol production restricted to 0.3 g/L (0.04 oz/gal). Not to be added to a final vinegar or alcohol product.~~	The original listing was triggered specifically by the wine sector but has been revised to accommodate the broadest range of alcohol and vinegar fermentations possible. Two separate listings for Potassium chloride and Dibasic have been added.

Table 6.4 – Ingredients not classified as food additives

Table 6.4 – Ingredients not classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Amino acids **[NEW]**	May be used if legally permitted for infant formula and formulated liquid diets.	*Note – this substance is erroneously not listed in the CGSB draft submitted to public comment.*
Carriers	Carriers of non-agricultural origin may be used if listed on Tables 6.3, 6.4 or 6.5. Non-organic carriers of agricultural origin (such as wheat starch) may be used if ingredients or processing aids containing organic carriers are not commercially available.	
Collagen casings	Collagen shall be derived from animal sources. If derived from cattle, collagen shall be guaranteed free of Specified Risk Material (SRM). Other ingredients (such as, but not limited to: cellulose, calcium coatings, glycerin, etc.) added to collagen casings during their manufacture that remain in the collagen casing when it is used shall respect the requirement provided in 1.4 a) of CAN/CGSB-32.310. Permitted for poultry sausage.	
Cultures	See Table 6.4 Microorganisms.	
[NEW] Dibasic ammonium phosphate (diammonium phosphate, DAP)	As a yeast and bacterial food for vinegar and alcohol production restricted to 0.3 g/L (0.04 oz/gal). Not to be added to a final vinegar or alcohol product.	The original listing was triggered specifically by the wine sector but has been revised to accommodate the broadest range of alcohol and vinegar fermentations possible.

Table 6.4 – Ingredients not classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Flavours	Derived from biological sources using approved methods (see Table ~~11~~ 12 B (1) & (2) Origin and mode of production of CAN/CGSB-32.310), and substances (see Table 6.3 Extraction solvents and precipitation aids).	Reference correction
Microorganisms	Microbial preparations may contain substrates derived from agricultural or biological substances such as milk, lactose, soy, agar, etc. May also contain permitted carriers (see Table 6.3 & 6.4 Carriers). Includes starter and dairy cultures and other preparations of microorganisms normally used in product processing.	
Nitrogen	Shall be food-grade quality.	
Oxygen		
Potassium chloride	From mined sources such as sylvite, carnalite, and potash. May be used for all types of food production, including as food for yeast and bacteria in vinegar and alcohol production.	Potassium chloride was added to Table 6.4. The original listing was triggered specifically by the wine sector but has been revised to accommodate the broadest range of alcohol and vinegar fermentations possible.
Potassium iodide	Shall be used when legally required or permitted.	
Salt	Substances listed in Tables 6.3 or 6.4 may be added to mined or sea salt. See Table 6.3 Sodium chloride; Potassium chloride. See definition of Salt in clause 3 of CAN/CGSB-32.310.	

Table 6.4 – Ingredients not classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Smoke flavour	See Table 6.3 Yeast.	
Starch	From rice and waxy maize—Shall be derived using substances listed in Table 6.3 Extraction solvents and precipitation aids, where applicable. Starch shall not be modified by chemicals. Starch may be modified using physical or enzymatic methods. Cornstarch—May contain substances that are plant-derived or listed in Tables 6.3, 6.4 or 6.5.	
Vitamins and mineral nutrients	Shall be used if legally required (e.g., fluid milk, white flour, infant formula, meal replacement, etc.). The following non-dairy substitute products may be fortified on a voluntary basis, if legally permitted: plant-based beverages, products that resemble cheese, and butter substitutes. Ferrous sulphate—Shall be used if legally required and may be used, on a voluntary basis, if legally permitted.	

Table 6.4 – Ingredients not classified as food additives		
Substance name(s)	**Origin and usage**	**Rationale**
Yeast	If organic sources of yeast are not commercially available, these alternative sources of yeast may be used: a) autolysate; b) bakers' (may contain lecithin, as listed in Table 6.3); c) brewers'; d) nutritional; and e) torula. Growth on petrochemical substrate and sulphite waste liquor is prohibited. Yeast may be smoked or smoke flavoured. When smoked, the smoke shall come from concentrated, condensed smoke from wood without additional ingredients (unless listed in Tables 6.3, 6.4 or 6.5).	

Table 6.5 – Processing aids

Table 6.5 – Processing aids

Substance name(s)	Origin and usage	Rationale
Acer pennsylvanicum	As an anti-foaming agent in maple syrup production.	
[NEW] Acids *(Acides)*	Including the following sources: a) alginic; b) citric—from fruit and vegetable products or produced by microbial fermentation of carbohydrate substances; and c) lactic.	The entire 'Acid' listing from Table 6.3 was added to Table 6.5. Given these acids are acceptable as ingredients, they are more than acceptable as processing aids. Lactic acid can be used as a carcass wash under the standard as a cleaner, however carcass washes are classified as processing aids by CFIA.
Activated charcoal	Shall be of plant origin. Prohibited for use in the production of maple syrup.	
Alcohol, ethyl (ethanol)	Shall be organic if commercially available.	
Argon		
Ascorbic acid (vitamin C)	For use as an anti-browning agent prior to the extraction or concentration of fruit or vegetable juice.	
Bentonite		
Calcium carbonate		
Calcium hydroxide (lime)		

Table 6.5 – Processing aids

Substance name(s)	Origin and usage	Rationale
Calcium sulphate (gypsum)	Sulphates produced using sulphuric acid are prohibited. May be used: a) as a carrier for cakes and biscuits; b) for soybean products; and c) for bakers' yeast.	
Carbon dioxide (CO_2)		
Carrageenan (Irish moss)	Derived using substances listed in Table 6.3 *Extraction solvents and precipitation aids*.	
Casein	Shall be from organic sources if commercially available. Non-organic casein shall be derived from the milk of animals not treated with rBGH (recombinant bovine growth hormone).	
~~Citric acid~~	~~From fruit and vegetable products or produced by microbial fermentation of carbohydrate substances.~~	Moved to the listing for Acids.
Clay dust	As a filtering agent in maple syrup production.	
Cellulose	As a filtering aid (non-chlorine bleached) and for use in inedible regenerative sausage casings. The TCF (Totally Chlorine Free) method of bleaching is permitted.	
Diatomaceous earth	As a food filtering aid or as a clarifying agent.	

Table 6.5 – Processing aids

Substance name(s)	Origin and usage	Rationale
Enzymes	The following sources of enzymes are permitted: a) any preparations of enzymes normally used in food processing derived from edible, non-toxic plants, non-pathogenic fungi or non-pathogenic bacteria; b) animal-derived—shall be organic if commercially available: rennet; catalase from bovine liver; animal lipase; pancreatin; pepsin; and trypsin. Animal-derived enzymes shall be free of Specified Risk Material (SRM); c) egg white lysozyme.	
Gelatine	Shall be from organic sources if commercially available. Permitted sources are: a) plants; and b) animals. Animal gelatine may be used in preparations of canned meat or as a gelling agent for gummed candy. If derived from cattle, gelatine shall be guaranteed free of Specified Risk Material (SRM).	
Hydrogen peroxide	Food-grade. For use as a bleaching agent for proteins and starches.	
Isinglass	As a fining agent (fish-based).	
Kaolin	As a clarifying agent.	
Lecithin	Shall be organic if commercially available. Bleached form is permitted if processed using food-grade hydrogen peroxide.	
Nitrogen	Shall be food-grade quality.	
Oxygen		

Table 6.5 – Processing aids

Substance name(s)	Origin and usage	Rationale
Ozone		
[NEW] Peracetic acid		Adding peracetic acid (which is also in Table 7.3) to Table 6.5 makes it easier for meat processors given that carcass washes are classified as processing aids by CFIA.
Perlite	For use as a filtering aid.	
Potassium carbonate		
Potassium hydroxide (caustic potash)	For pH adjustment. Prohibited for use in lye peeling of fruits and vegetables.	
Silicon dioxide (silica)	No restrictions on sources or uses except for maple (see 7.2.12.6 of CAN/CGSB-32.310)	
Sodium bicarbonate (baking soda)		
Sodium hydroxide (lye or caustic soda)	Prohibited for use in lye peeling of fruits and vegetables.	
Talc	As a filtering agent.	
Tannic acid	Shall be from an organic source if commercially available. Shall be derived using substances listed in Table 6.3 Extraction solvents and precipitation aids. Permitted as a filtration aid for wines.	
Tartaric acid ($C_4H_6O_6$ INS 334)	From lees. For beverages.	

Table 6.5 – Processing aids

Substance name(s)	Origin and usage	Rationale
Vegetable oils	From organic sources if commercially available. Derived using substances listed in Table 6.3 Extraction solvents and precipitation aids. Maple syrup production—vegetable oils shall be organic and without allergenic potential.	
Waxes	If organic waxes, such as beeswax or carnauba, are not commercially available, waxes derived from non-organic biological sources may be used. Edible wax cheese coatings that require a knife to cut or peel the wax away shall not contain paraffin, microcrystalline wax, non-listed preservatives, colours, bactericides or fungicides. Non-edible, fully removable (i.e., no knife is needed to cut or peel the wax away from the cheese), non-organic cheese wax may be used and shall be considered packaging per 8.1.6 of CAN/CGSB-32.310. For waxes applied to produce – see Table 6.3 Waxes, produce.	

7 Permitted substances lists for cleaners, disinfectants and sanitizers

7.1	Classification	**Rationale**
7.1.1	The cleaners, disinfectants and sanitizers listed below are used to remove dirt, filth and foreign matter from organic products and organic product contact surfaces. These substances are also used to control microorganisms that may contaminate products. The use of these substances may require a removal event, as defined in clause 3 of CAN/CGSB-32.310.	
7.1.2	They are classified as follows:	
a)	food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event;	
b)	cleaners, disinfectants and sanitizers permitted on organic product contact surfaces, for which a removal event is mandatory prior to an organic production load or run.	
7.1.3	All non-organic ingredients listed on Safety Data Sheets (SDS) and active ingredients listed on the label of formulated cleaners, sanitizers and disinfectants shall be listed in Tables 7.3 or 7.4. Other non-organic ingredients used without a removal event shall be limited to substances listed in Table 7.3; water; compounds used to treat drinking water; and product stabilisers, such as HEDP (1-hydroxyethane 1,1-diphosphonic acid) or dipicolinic acid, whose function is to prevent the chemical degradation of substances listed in Table 7.3. Table 7.4 compliant products may contain non-active ingredients, including, but not limited to, dyes, fragrances, and chemical agents used to prevent physical separation of foams or emulsions.	
7.2	a) Substances listed in Tables 7.3 and 7.4 are not subject to 1.4 or 1.5 of CAN/CGSB-32.310. b) Clause 7 does not apply to maple syrup production. The operator shall meet the specific requirements for the different stages of production as described in 7.2 of CAN/CGSB 32.310.	The addition of this exception for cleaning substances is necessary as it states in the last sentence of 1.1 Scope of 32.311 "Listed substances comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310." That would include cleaning substances - but that never was the intention of the standard.

Table 7.3 – Food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event

Table 7.3 – Food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event

Substance name(s)	Origin and usage	Rationale
Acetic acid	May be used on organic product contact surfaces. May be used on organic products if produced by microbial fermentation of natural carbohydrate sources (sugars, wood, etc.). Example: apple cider vinegar. May be filtered or unfiltered.	
Alcohol, ethyl (ethanol)	May be used on organic product contact surfaces.	
Alcohol, isopropyl	May be used on organic product contact surfaces.	
Alcohol, organic sources		
Ascorbic acid (vitamin C)		
Carbon dioxide (CO_2)		

Table 7.3 – Food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event

Substance name(s)	Origin and usage	Rationale
Chlorine compounds	The following chlorine compounds are permitted: a) calcium hypochlorite; b) chlorine dioxide; c) hypochlorous acid generated via electrolyzed water; d) sodium hypochlorite. ~~Shall not exceed maximum levels for safe drinking water.~~ Chlorine compounds may be used: a) for wash water in direct contact with crops or food; b) in flush water from cleaning irrigation systems, equipment, storage or transport units—application to crops or fields is permitted. Shall not exceed the maximum level of chlorine in potable water, as per the *Guidelines for Canadian Drinking Water Quality* published by Health Canada, as well as any applicable provincial requirements.	Provides clarity.
Citric acid		
Glycerol (glycerine, glycerin)	~~Shall be from organic sources if commercially available.~~ ~~Shall be from vegetable oil or animal fat.~~ ~~Shall be produced using fermentation or by hydrolysis.~~ May be used on organic product contact surfaces, including hands. May be used on organic products if sourced from vegetable oil or animal fat; and produced using fermentation or by hydrolysis.	Removing the source restrictions for glycerol in cleaning products (including hand cleaners and sanitizers) makes it possible for operators to use personal care products and other cleaning products containing glycerol without having to research for a restricted source, as is required for glycerol used as a food additive (Table 6.3).

Table 7.3 – Food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event

Substance name(s)	Origin and usage	Rationale
Hydrogen peroxide		
Lactic acid		
Magnesium sulphate		
Microorganisms	Living or dead biological organisms, such as viruses, phages, bacteria, protozoa, fungi, etc.	
Non-ionizing radiation	May be used to manage pest loads on product and product contact surfaces, including facilities and equipment, including empty hives.	See rationale for "Non-ionizing radiation" in Table 4.2.
Ozone		
Peracetic (peroxyacetic) acid	On food and plants: peracetic acid may be used in wash or rinse water. Peracetic acid may also be used on food contact surfaces.	
Potassium bicarbonate	On organic product contact surfaces.	
Sodium bicarbonate (baking soda)		
Sodium carbonate (soda ash)	Biological or mined sources. See Table 7.4 Sodium carbonate (soda ash), synthetic.	
Sodium citrate		
Sodium hydroxide (lye or caustic soda)		
Vinegar		

Table 7.4 – Cleaners, disinfectants and sanitizers permitted on organic product contact surfaces for which a removal event is mandatory

Table 7.4 – Cleaners, disinfectants and sanitizers permitted on organic product contact surfaces for which a removal event is mandatory		**Rationale**
Substance name(s)	**Origin and usage**	
Chlorine compounds	The following chlorine compounds are permitted up to maximum label rates: a) calcium hypochlorite; b) chlorine dioxide; c) hypochlorous acid generated via electrolyzed water; d) sodium hypochlorite.	
Detergents	Detergent products shall be: 1) readily, ultimately or inherently biodegradable as per the Organisation for Economic Co-operation and Development (OECD) definitions; or, 2) composed of OECD biodegradable surfactants, and substances listed in Tables 7.3 or 7.4; or, 3) readily eliminated during wastewater treatment such that harm to the environment is minimized.	This revision eliminates the need to assess OECD compliance of a detergent product if it is composed solely of compliant surfactants and substances listed in Table 7.3 or 7.4.
Essential oils	Derived from plant sources using substances in Table 6.3 Extraction solvents and precipitation aids. May contain permitted carriers (see Table 6.3 and 6.4 Carriers).	
Iodine	Shall be non-elemental. Shall not exceed 5% solution by volume (example: iodophors).	
Lime	All forms of lime, including calcium carbonate, calcium hydroxide and calcium oxide.	

Table 7.4 – Cleaners, disinfectants and sanitizers permitted on organic product contact surfaces for which a removal event is mandatory

Table 7.4 – Cleaners, disinfectants and sanitizers permitted on organic product contact surfaces for which a removal event is mandatory		**Rationale**
Substance name(s)	**Origin and usage**	
[NEW] Methanesulphonic acid (MSA)		Adding MSA to Table 7.4 reduces the need for operators to evoke 8.2.3 when a stronger acid is needed than those currently listed in Table 7.4. MSA is a mineral acid, like nitric or sulphuric acid, but not as strong. It is common in the environment and part of the biogeochemical sulphur cycle. MSA is added to cleaning formulations including a variety of biodegradable detergents to help dissolve minerals.
Octanoic acid (caprylic acid)		
Peroxyoctanoic acid (POOA)		
Phosphoric acid	On dairy equipment.	
Potassium carbonate	Documentation shall demonstrate that effluent discharge was neutralized to minimize negative environmental impact.	
Potassium hydroxide (caustic potash)		

Table 7.4 – Cleaners, disinfectants and sanitizers permitted on organic product contact surfaces for which a removal event is mandatory

Table 7.4 – Cleaners, disinfectants and sanitizers permitted on organic product contact surfaces for which a removal event is mandatory		**Rationale**
Substance name(s)	**Origin and usage**	
Potassium permanganate	Not to exceed 1% solution by volume.	
Saponin	Derived from plants such as *Yucca schidigera* and *Quillaja saponaria.*	
Soap-based algicide (demossers)		
Soaps	Soaps shall consist of fatty acids derived from animal or vegetable oils.	
Sodium borate		
Sodium carbonate (soda ash), synthetic		
Sodium percarbonate		
Sodium silicate	In detergents.	
Surfactants	Surfactants, either stand-alone or when formulated with substances permitted by Tables 7.3 and/or 7.4 to create cleaning products including detergents, soaps, degreasers, and disinfectants, ~~detergents~~ shall be readily, ultimately or inherently biodegradable as per the Organisation for Economic Co-operation and Development (OECD) definitions, or readily eliminated during wastewater treatment such that harm to the environment is minimized.	Clarifying edit. No change in intention.
Wetting agents	Substances listed in Table 4.2 or 7.3, including saponins and microbial wetting agents.	

8 Facility management substances

		Rationale
8.1	**Classification**	
8.1.1	Facility management substances are classified according to the following uses and applications:	
a	Substances listed in Table 8.1 are pesticides (See *Pesticides* definition in clause 3 of CAN/CGSB-32.310) that may be used in and around facilities, as annotated and as specified in 8.3.2 of CAN/CGSB-32.310. These substances may also be used in traps, lures and as repellents, unless indicated otherwise within substance annotations.	
b	Substances listed in Table 8.2 may be used in facilities as annotated, to accomplish a physiological effect post-harvest.	
c	Facility pest management substances and post-harvest substances are not subject to 1.4 and 1.5 of CAN/CGSB-32.310.	The addition of this exception for facility pest management substances is necessary as it states in the last sentence of 1.1 Scope of 32.311 "Listed substances comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310," which was never the intention with the context of pest control substances.

Table 8.1 – Facility pest management substances

		Rationale
Substance name(s)	**Origin and usage**	
Ammonium carbonate	As an attractant in insect traps.	
Baits for rodent control ~~bait stations~~	Non-poisonous baits are allowed for use with rodent control devices in locations where there is no potential for contamination of organic products, crops, or fields with prohibited substances.	This annotation was fleshed out to help operators comply with the standards as the lack of an annotation was creating some confusion. There is no change in intention or requirements.
Boric acid	May be used for structural pest control (example: for ants). Direct contact with organic products is prohibited.	
Carbon dioxide (CO_2)	For controlled atmosphere storage and for storage pest control.	
Cholecalciferol (vitamin D_3)	Prohibited inside organic food processing and food storage facilities.	
Diatomaceous earth	Direct contact with organic products is permitted.	
Formulants	May only be used with substances listed in Table 8.1. Only formulants classified as List 4A or 4B by the Pest Management Regulatory Agency (PMRA) or derived from biological or mineral sources may be used with substances in Table 8.1. Formulants classified as List 3 by PMRA may be used with passive pheromone dispensers. Formulants classified as List 4A, 4B or 3 by PMRA are not subject to 1.4 or 1.5 of CAN/CGSB-32.310. Formulants classified as List 1 or 2 by PMRA are prohibited.	
Neem oil		

Table 8.1 – Facility pest management substances

Pheromones and other semiochemicals	For pest control. Use in pheromone traps or passive dispensers.	
Pyrethrins	Without piperonyl butoxide. Direct contact with organic products is prohibited.	
Repellents	Shall be derived from a biological source, such as sterilized blood meal, rotten eggs, hair or predator scents. May contain other biological compounds and PMRA 4a- or 4b-listed formulants.	
Soaps, ammonium	As a large animal repellent. Direct contact with organic products is prohibited.	

Table 8.2 – Post-harvest substances

		Rationale
Substance name(s)	**Origin and usage**	
Carbon dioxide (CO_2)	For controlled atmosphere storage.	
~~Clove oil~~ Botanical oils	~~As a sprout inhibitor.~~ Oils from the Lamiaceae (mint family), Apiaceae/Umbelliferae (celery family) and Myrtaceae (clove family) may be used as post-harvest sprout inhibitors.	When clove oil was added to the table, the only information available on using botanical oils as sprout inhibitors focused on the efficacy of clove oil as a natural sprout inhibitor on potatoes. Up to that time, most sprout inhibitors were chemical products like chlorpropham (CIPC) - products completely unacceptable to organic standards. Time to celebrate how science has advanced: now there is evidence that other botanical oils can be effective sprout inhibitors. Furthermore, there is no reason to restrict the use exclusively to potatoes.

Table 8.2 – Post-harvest substances

		Other organic crops, such as onions, shallots, garlic and yams, may benefit from this improved listing.
Ethylene	For post-harvest ripening of tropical fruit and degreening of citrus and to control sprouting of potatoes post-harvest in holding bins.	
Formulants	Formulants may only be used with substances listed in Table 8.2. Only formulants classified as List 4A or 4B by the Pest Management Regulatory Agency (PMRA) or are non-synthetic may be used with substances in Table 8.2. Formulants classified as List 3 by PMRA may be used with passive pheromone dispensers. Formulants classified as List 4A, 4B or 3 by PMRA are not subject to 1.4 or 1.5 of CAN/CGSB-32.310. Formulants classified as List 1 or 2 by PMRA are prohibited.	
Nitrogen	For controlled atmosphere storage.	
Oxygen		