E: APICULTURE (310 CLAUSE 7.1)

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7.1 APICULTURE	
7.1.1 "Bees may be introduced to an operation and managed for production benefits, such as pollination of organic crops. If managed as a livestock species for the production of organic products (for example, honey, pollen, propolis, royal jelly, beeswax and bee venom), bees shall be managed in accordance with this standard."	7.1 Conventional honeybees can be used to pollinate organic crops. However, in order to collect organic products (e.g., honey, pollen, propolis, royal jelly, beeswax and bee venom), hives need to be managed as described in this standard.
7.1.2 "The operator shall prepare a detailed organic plan (see 4.1, 4.2 and 4.3) that describes the source of bees; production methods; bee diet; control of pests, including diseases, mites and insects; breeding; and other related issues of colony management. Where applicable, the organic plan shall also describe crop management practices."	7.1.2 The beekeeper needs to prepare an Organic Apiculture System Plan (see 4.1, 4.2 and 4.3), which should include the following elements: • detailed map of the forage zone that shows the location of managed hives, organic land, wild land, and all non-organic areas; • description of the quantity of organic and/or wild forage to be provided for each colony; • honeybee colony density; • description of the water sources available in the forage zone; • listing of all land to which prohibited substances are applied; • all other sources of potential contamination located in the forage zone; • records that include the number, location, condition and management of colonies used in organic production; • details on practices that can help prevent and treat disease and pest problems; and • extraction, processing and storing of all bee products.
7.1.3 "Records that document all apiary management activities, including removal of supers and extraction of honey (see 4.4), shall be maintained."	7.1.3 A chronological log of all activity needs be kept. Records include all written materials. A seasonal journal is usually the easiest way to record beekeeping activities, but beekeepers may comply with the standards in other ways. It can be as simple as notes on a calendar. In addition to records of beekeeping activities, maintenance of sales logs, invoices and other financial records are also required to comply with 32.310-4.4.

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7.1.4 "The treatment and management of bee colonies shall be informed by the principles of organic production (see Introduction, section II)."	7.1.4 Organic beekeeping follows the organic principles described in Section II (the introduction to the standards) and in the appendix, namely to: • protect the environment; • encourage biodiversity; • recycle materials; • provide attentive care to livestock (including bees); • protect the organic integrity of the product during processing; and • use renewable resources in local systems.
7.1.5 "Organic plants and undomesticated, non-agricultural vegetation shall be the primary source of nectar, honeydew and pollen. Crops treated with prohibited substances and genetically engineered crops shall be avoided."	7.1.5 Organic honeybees need to forage on organic or wild vegetation.
7.1.6 "Bee health shall be based on appropriate measures, such as selection of stock with disease-resistant traits, availability of suitable forage, and good apiary management practices."	7.1.6 Health is maintained by supplying access to suitable forage, using good management practices, and selecting for good stock. In particular, honeybees with disease-resistance, strong foraging ability and good housekeeping abilities should be selected for organic stock.
7.1.7 "When bees are placed in wild areas, impact on the indigenous insect population shall be considered."	7.1.7 Bee yards should be situated so that they do not have a negative impact on wild insects in the area. Certifying bodies may wish to ensure that there is adequate forage available for colonies in wild sites; not just for the colonies, but also for wild insects that rely on flowers for their nourishment. "Adequate forage" does require some subjective judgment on the part of certifying bodies, but common sense should guide certifying body inspectors in this regard.
7.1.8Transition	
7.1.8.1 "Colonies and hives (including brood and honey super frames) shall be under continuous organic management for at least 12 months before products may be considered organic."	7.1.8.1 A period of 12 months of organic hive management is required before organic products can be harvested. For certification purposes, the one-year transition only begins when an operator has submitted the Organic Plan to a certifying body (as part of the application for certification). When operators holding valid organic certification want to add new production sites, they don't need to wait a year. Instead, they should simply list new production sites (fields, gardens, etc.) on their annual application for certification to be inspected along with the rest of the operation. The operators must document that the new sites comply with

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7.1.8.2 "Colonies and hives shall not be rotated between organic and non-organic management systems. Bees treated with antibiotics are subject to the requirements of 7.1.15.7."

7.1.9Introduced bees
"If commercially available, introduced bees, that is, replacement bees for established colonies, shall be organic. Replacement colonies shall be produced within the operation or come from another established organic apiary."

7.1.10 Location of hives
"Where sources or zones of prohibited substances are present, that is, genetically engineered (GE) crops or environmental contamination, apiaries shall be protected with a buffer zone of 3 km (1.875 mi.). The following exceptions apply:

a) "fertilizers (including those that are not listed in Table 4.2 Column 2) are permitted in the buffer zone, with the exception of sewage sludge; and

b) "buffer zones may be reduced if natural features that would restrict the likelihood of bee travel (such as forests, hills or waterways) and abundant compliant forage are present."

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organic standards, and include this documentation in their annual application for certification.

7.1.8.2 Once organic management has begun, beehives must be managed organically on a continuous basis. If hives are treated with an antibiotic, the hive must go through a 12-month transition period before being considered organic.

7.1.9 This first sentence defines "introduced bees" (also called "replacement bees") to clarify that the standard is referring to bees only (e.g., queens) – not to the replacement of an entire colony (or nuc). If there are no organic bees available as replacements, non-organic queens can be used.

A nuc (small colony) is relatively easy to produce and is the starting point for the beekeeper to make a full hive of bees. Bees coming into an organic operation as a colony or nuc must always be produced from within the operation or come from an organic apiary. Operators must keep accurate records for the introduction of bees coming into an organic operation from another organic apiary.

7.1.10 The standard requires a 3000-metre buffer zone between the hives and GE crops and other prohibited substances including agricultural pesticides, herbicides, systemic seed treatments and sewage sludge.

Potential contaminants used by neighbouring home owners and other non-agricultural prohibited substances can be assessed as to the risk they pose to the bees and the honey. Generally, low-density rural residences within the 3000-m buffer zone might not present a significant risk if it can be established (e.g., with an affidavit) that there is no use of prohibited pesticides or herbicides on forage plants.

Organic honey production typically cannot take place if any of the following are found within the 3000-m buffer zone:

- high-density housing areas, such as subdivisions;
- golf courses;
- garbage dumps or landfill sites;
- industrial complexes;
- very busy roads; or
- commercial non-organic greenhouses/nurseries.

No transition period is required for the 3000-metre buffer zone. No prohibited substances, other than fertilizers, can have been applied to growing plant material within the 3000-m buffer.

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7.1.11 **Forage and feeding**

7.1.11.1 "The primary food source for adult colonies shall be nectar and pollen collected from sources conforming to this standard and food sources stored by the bees in the hive (honey, pollen, etc.)."

a) "In the event of a regional or seasonal shortage of forage and for winter feeding of colonies, the following is allowed in order of preference:

1) organic honey from within the operation;

2) organic sugar (e.g., inverted, syrup, fondant);

3) non-organic transitional honey;

4) non-organic, non-genetically engineered (non-GE) sugar (compliant with 1.4 and 1.5);"

b) "In the case of the use of non-organic, non-GE refined sugar, the operator shall:

1) maintain and document appropriate practices to prevent the mixing of organic and non-organic feeds in honey supers; and

2) develop a plan to reduce, and potentially eliminate, the use of non-organic refined sugar from the bee production system by December 2025."

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The size of buffer zones can be reduced if the presence of non-organic crops within the 3000-m zone is considered to pose only a minimal risk to the integrity of organic hive products; this decision must be assessed by certification agencies on a case-by-case basis. For example, bees are unlikely to collect pollen and nectar (which could be exposed to contaminants) from the conventional crops if there are (i) abundant high-quality forage throughout the season near the hives **and** (ii) natural barriers (such as forests, hills or water bodies) between the hives and the non-organic crops.
It may be appropriate to define the buffer zone by the outer perimeter of the bees' anticipated foraging area (the farthest the bees are expected to travel). Within this reduced buffer zone, all the restrictions in 7.1.10 apply (i.e., no use of prohibited substances or GE crops).

7.1.11.1 The following is an excerpt from an article by the Organic Federation of Canada. Surviving Canadian winters can be a challenge for honeybees, which originally came from Africa or Asia, and were domesticated in southern Europe. Non-organic beekeepers often add sugar syrup or fondant to the hives in late fall to provide the bees with enough energy reserves to survive our long, cold winters. For organic beekeepers, there are standards to comply with and the issue is more complex.

The Canadian Organic Standard (COS) states that organic honey and pollen shall be the primary food source for adult bees. From late spring to early fall, the bees collect their own food from flowers, but when the blooms are gone, they must rely on the reserves in the hive. This is in addition to the honey the beekeepers have removed in order to have a financially sustainable business. In areas with a short frost-free season, the food collected by the bees might not be adequate (in terms of quantity or quality) to enable the bees to withstand the winter. Beekeepers need to anticipate the winter needs of the bees and supply the food in the fall. There is no opportunity during the winter to provide more food because opening the hive can stress bees and lead to many problems.

In December 2019, the Standards Interpretation Committee (SIC) ruled that feeding organic honey or sugar should not be a recurring annual event; winter alone is not considered "exceptional" enough to justify the routine feeding of bees. This interpretation by the SIC caused an

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c) "Feeding shall only occur between the last honey harvest and 15 days before the start of the next nectar or honeydew flow-period. NOTE: Article 7.1.11.1 will be reviewed by 2025."	outcry after it was submitted for public review. The SIC soon discovered that a significant number of organic beekeepers provide honey or sugar every winter because they consider that our harsh, long winters are "exceptional" for bees adapted to warm European climates. In addition, many organic beekeepers are located in remote or northern regions of Canada, because in southern areas where there is more agriculture, there is a greater risk of contamination by agrochemicals and genetically engineered crops. In these colder areas with longer winters and shorter foraging seasons, there is a greater need to supply bees with food to survive the winter. The Beekeeping Working Group passionately discussed the issue at length. No one wants to see mass mortality of organic bees due to starvation during the winter but the issue is complicated. Refer to the OFC article published in February 2020 to find the highlights of the WG's discussions. The COS 2020 states that bees may be fed organic honey, organic sugar or even non-organic sugar for winter feeding, as well as "in the event of a regional or seasonal shortage of forage." So, feeding the bees every winter will be allowed. The preference is for organic honey or organic sugar, however liquid organic sugar might not be available by the tanker truckload in remote parts of the country. Consequently, beekeepers will be permitted to supplement the hive with non-organic sugar provided it is not derived from genetically engineered plants (such as genetically engineered sugar beets).
7.1.11.2 "Feed shall not be provided less than 30 days before the harvest of honey."	
7.1.12 **Colony management**	
7.1.12.1 "Hives shall be clearly and individually identified, and shall be monitored regularly, that is, at one- to two-week intervals, depending upon the colony, weather conditions and time of year."	7.1.12.1 Individual hives must be identifiable with a number or mark. Apiaries must be visited on a regular basis. Operators have some flexibility regarding how often they should inspect their colonies, but should not leave an apiary alone for months at a time. Organic beekeeping requires active management.
7.1.12.2 "Wing clipping of queen bees is prohibited."	
7.1.12.3 "Bees shall be removed from hives with bee escape boards, shaking, brushing and forced-air blowers."	7.1.12.3 Escape-boards, shaking, brushing and forced-air blowers are acceptable for removing bees from the hive. Chemical removal is not allowed. Any substance used in conjunction with bee escape boards must be listed in Table 5.3 of the Permitted Substances Lists.

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7.1.12.4 "Plant-based materials that have not been treated with prohibited substances (see 1.5) may be used in bee smokers."	7.1.12.4 Beekeepers should ensure that any materials they use in smokers are not contaminated. Used burlap should be washed before being burnt in smokers. Any plant or plant-based material that has been treated with a prohibited substance is not permitted.
7.1.12.5 "Annual destruction of bee colonies, following nectar flows, is prohibited."	7.1.12.5 Beehives must be managed in a sustainable manner and not destroyed each year (e.g., to avoid the cost and risk of overwintering hives).
7.1.13 **Hive construction**	
7.1.13.1 "Hives shall be constructed of and maintained with natural materials, such as wood and metal. Pressure-treated lumber or particleboard, wood preservatives and lumber treated with prohibited substances are not permitted."	7.1.13.1 Plastic materials are allowed if they are dipped in organic beeswax before use.
7.1.13.2 "Exterior surfaces of the hive may be painted with non-lead-based paints."	7.1.13.2 Lead-based paints cannot be used on hives. Latex paint, paraffin and linseed oil are some alternatives to lead-based paint.
7.1.13.3 "If dipped in organic beeswax, plastic foundation is permitted."	
7.1.14 **Health care**	
7.1.14.1 "Preventative health care practices shall be established and maintained, including the selection of bee stocks resistant to prevalent pests including mites and diseases; the selection of hive locations considering site-specific conditions; the availability of sufficient pollen and honey; the renewal of beeswax; the regular cleaning and disinfection of equipment; and the destruction of contaminated hives and materials when appropriate for pest management."	7.1.14.1 Beekeepers are responsible for maintaining good hive management practices to protect bee health at all times. This principle provides the basis for managing healthy organic colonies. Above all other considerations, beekeepers should actively seek healthy and resistant stock; breed for healthy characteristics; and maintain young, vigorous queens. Organic beekeeping is not simply a matter of not using antibiotics; organic beekeepers should strive constantly to develop and maintain healthy strains of bees.
7.1.14.2 "The operator shall promote strong, healthy colonies. Management practices may include: merging weaker, albeit healthy, colonies; renewing queens, if necessary;	

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maintaining adequate hive density; inspecting colonies systematically; and relocating diseased colonies to isolated areas."	
7.1.15 Managing pests including insects and diseases	
7.1.15.1 "The operator shall be a knowledgeable beekeeper who is familiar with the life cycle and behaviour of bees and related disease-causing organisms, parasitic mites and other pests. In the presence of such pests, every effort shall be made to restore the health of a colony."	7.1.15.1 An experienced beekeeper must be involved with all organic beekeeping operations. Every effort must be extended to keep beehives alive and healthy. Organic beekeepers need to know about bees themselves, and not just about beekeeping. Organic beekeepers must strive continually to improve their knowledge over time. Though this passage may seem redundant (and difficult to enforce), the reason behind it is that beekeeping is difficult, and organic beekeeping is doubly difficult – beekeepers must therefore apply all their skills and knowledge if they hope to succeed.
7.1.15.2 "Every effort shall be made to select and breed queen bees for resistance to diseases and parasites."	7.1.15.2 This paragraph deals with queen rearing, but it does not mean that every organic apiarist needs to be an expert in queen rearing. The intent of the paragraph is that beekeepers should constantly assess their queens, and either breed their own stock or obtain good stock from a competent queen breeder. Non-organic queens can be purchased if it can be demonstrated that there are no organic queens commercially available.
7.1.15.3 "Comb foundation shall be obtained from beeswax within the operation or, if commercially available, from other organic sources."	7.1.15.3 Comb foundation must come from the beekeeping operation or from another organic source.
7.1.15.4 "Pests (including diseases) shall be controlled with management methods or modified equipment."	7.1.15.4 This statement of principle states that beekeepers shall manage their bees to produce healthy colonies (so that they do not need to use drugs). Pests and diseases must be controlled through good management practices.
7.1.15.5 "Botanical compounds may be introduced into the hive provided that such remedies are listed in Table 5.3 of CAN/CGSB-32.311, and are not used within 30 days of nectar flow or when honey supers are on the hive."	7.1.15.5 To avoid having residue from botanical remedies in the honey, botanical remedies can only be used after the last honey harvest of the season, and use must be discontinued 30 days before the addition of honey supers. Permitted botanical compounds to control pests and disease are listed in Table 5.3 of CAN/CGSB-32.311. Botanical compounds are those produced from plants including plant oils.

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7.1.15.6 "Therapeutic applications of substances to control pests (including parasites and diseases) listed in Table 5.3 of CAN/CGSB-32.311 are permitted."

7.1.15.6 Table 5.3 of CAN/CGSB-32.311 lists materials that are permitted for use in beehives, such as formic and oxalic acid.

7.1.15.7 "Allopathic drugs (for example, antibiotics) are prohibited. However, where the imminent health of the colony is threatened, oxytetracycline is permitted (See *Antibiotics, oxytetracycline* in Table 5.3 of CAN/CGSB-32.311. Before treatment, hives and colonies shall be removed from the foraging area and taken out of organic production to prevent the spread of antibiotics within the apiary. Treated hives (containers present during treatment) along with the bees present during treatment (excluding queens) shall be placed in isolation and undergo a 12-month transition period. Wax present in the hives during treatment shall not be marketed as organic."

7.1.15.7 Antibiotics (e.g., oxytetracycline) are prohibited. However, in the case of a serious disease outbreak (e.g., American foulbrood) when hives are going to die without the use of an antibiotic, this treatment is allowed.
Prior to an antibiotic treatment, hives must be removed from the apiary. Once treated, hives must be placed in isolation and undergo a 12-month transition period. All treatments must be recorded in detail.

7.1.15.8 "Destroying the male brood is only permitted to contain infestation with varroa mites."

7.1.16 Extraction, processing and storage

7.1.16.1 "Extraction of honey from a comb with live brood is prohibited."

7.1.16.1 Honey cannot be extracted from a comb containing brood. The use of dedicated honey supers and/or queen excluders will help to ensure the brood is not included with the honey harvest.

7.1.16.2 "The quality and organic integrity of honey and other products of apiculture (see 7.1.1) shall be preserved and protected as specified in 8.1."

7.1.16.2 Quality and integrity rules described in 8.1 apply to honey processing. This requires organic apiarists to process their honey according to organic processing standards. The term "organic integrity" refers to the practice of not allowing any contamination of the organic product with non-organic (or prohibited) materials.

7.1.16.3 "Surfaces in direct contact with honey shall be constructed of food-grade materials or coated with beeswax."

7.1.16.4 "Heating of honey for extraction shall not exceed 35°C (95°F) and the decrystallization temperature shall not exceed 47°C (116.6°F). If organic honey is heated above

7.1.16.4 Honey heated above the specified temperatures cannot be labelled and sold as organic honey. It can, however, be used as an organic ingredient in a multi-ingredient organic product, such as cookies or snack bars.

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those temperatures, then it can only be used as an ingredient in a multi-ingredient product."

7.1.16.5 "Gravitational settling shall be used to remove debris from extracted honey. Sieves are permitted for removal of residual debris."

7.1.16.5 Gravitational settling is accomplished by allowing the honey to settle in large tanks, sometimes for days. Most of the foreign materials will float to the top where they can be skimmed off.

7.1.16.6 "Honey shall be packaged in airtight containers."

7.1.16.6 The intent is to ensure that organic honey is not susceptible to contamination. Certifying bodies should allow organic beekeepers some flexibility in their choice of containers, as long as the honey is secure. Canadian Honey Regulations state that, "32. (1) Every container of honey shall be in clean, sanitary and sound condition, have a tightly fitting lid and be free from severe dents or buckling and from obvious signs of internal rusting. (2) Every container of prepackaged honey shall be new."

7.1.16.7 "Facility cleaning, sanitation and pest management are subject to the requirements in 8.2 and 8.3."

7.1.16.7 Prepared products must maintain organic integrity and accurately label product composition. See 8.1 and 8.2 for details.