H: SPROUTS, SHOOTS AND MICROGREENS (310 CLAUSE 7.4)

CANADIAN ORGANIC STANDARDS*	COG'S GUIDE TO THE STANDARDS
7.4 SPROUTS, SHOOTS AND MICROGREENS PRODUCTION "Subclause 7.4 applies to crops that are harvested within 30 days of imbibition, either to be consumed with roots attached (e.g., sprouts and nanoshoots) or to be cut from the roots for consumption (e.g., shoots, living greens and microgreens). Subclause 7.4 does not apply to whole head products (e.g., heads of lettuce, mini cabbage)." "Sprouts, shoots, and microgreens may be produced in water or in a growing media whether they are grown in a growth chamber or vessel, greenhouse or other structures used to grow crops.	In the 2020 COS, "7.4 Sprouts, shoots and microgreens production" looks radically different from the 2015 COS. However, the main change was simply reorganizing the section to provide clarity. The two other signification changes are that 100% artificial lighting is allowed for sprouts, shoots and micro-greens (7.4.2) and a water quality monitoring program is now recommended, not required (7.4.1.3). 7.4 Sprouts, shoots and microgreens production The COS defines microgreens as edible young plants that are harvested later than sprouts, generally when the cotyledons are fully formed or when two or four true dicot leaves are present. Shoots tend to be monocots, such as corn. Sprouts and nanoshoots are usually marketed with the roots attached while shoots and microgreens are often cut from the root mass. Shoots and microgreens are produced in either soil or water, whereas sprouts are exposed to water only.
7.4.1 "Organic seed shall be used. NOTE: "A water monitoring program should be in place to ensure water is potable."	7.4.1 Sprouts, shoots and microgreens are immature plants. Non-organic seed is prohibited because immature plant tissues may contain pesticides or residues of cleaners used to clean non-organic seed. From a food safety perspective, it is important to verify the "potability" of the water, whether the operation is using municipal water or well water. "Potable water" means water that is safe to drink. To verify potability, operators can test the water on a regular basis according to the timetable in the operation's water monitoring program. Municipal water agencies, health authorities or third-party independent laboratories can often provide potability water test results. Additional testing for the organic program is not required. The chlorine requirement in PSL Table 7.3 stipulates that the residual levels of chlorine cannot be higher than 0.04-2.0 mg/L (ppm) for water in contact with organic products or organic product contact surfaces. In Canadian municipal water systems, 0.04-2.0 mg/L is the range. Free

*_Organic production systems: general principles and management standards_. CAN/CGSB-32.310-2020. Canadian General Standards Board. Dec. 2020. www.publications.gc.ca/site/eng/9.854643/publication.html.

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	chlorine test kits can be used to monitor chlorine residue levels.
7.4.2 "Artificial lighting is permitted to supplement or replace natural light."	7.4.2 Sprouts, shoots and microgreens, which are all harvested within 30 days of seeding, are the only crops that may be produced using 100% artificial lights under this standard other than certain transplants (as described in 5.3.3 and repeated in 7.5.4 of 32.310). Supplemental heat is permitted, as well as CO2 enrichment.
7.4.3 "Inert containers made of stainless steel and food-grade plastic are permitted in both water and growing media production systems."	7.4.3 Stainless steel or food-grade plastic containers are considered to be chemically neutral. These are permitted in water-based production systems because these containers won't contribute nutrients to the crop.
7.4.4 "Containers made of untreated plant-based materials (for example: burlap, coconut coir, fibre) are prohibited in water production systems, but are permitted in growing media production systems."	7.4.4 Containers made of agricultural materials, such as burlap, coconut coir or fibre, are permitted for sprouts, shoots or microgreens (SSM) produced in a growing media but not for SSM grown in water. Sprouts, shoots and micro-greens can be produced in "growing media" rather than water. In this case, containers made of agricultural media, such as burlap, coconut coir or coconut fibre, can function both as the container and as part of the growing media, as long as no prohibited substances have been used on the containers.
7.4.5 "Fertilizers in all stages of growing and harvesting are prohibited in water production systems."	7.4.5 Shoots and microgreens when grown in soil or growing media may be fertilized while sprouts, shoots and microgreens produced exclusively in water may not be fertilized.
7.4.6 "When growing sprouts, shoots or microgreens in a growing media, substances listed in Table 4.2 (Column 1) of CAN/CGSB-32.311 are permitted as the growing media and for crop nutrition. The physical structure of the growing media shall include both a mineral fraction (sand, silt or clay, excluding perlite and vermiculite) and a biological fraction."	7.4.6 Perlite and vermiculite can be used in the growing medium, but they don't count as the mineral fraction. If soil is used, the soil may not contain prohibited substances; this means the soil must come from an organic operation which can verify at least 36 months has elapsed since the last application of prohibited substances to the soil (see PSL Table 4.2 Column 1). Fertilizers may be added to a growing media used to produced shoots and microgreens.

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7.4.7 "Substances used for cleaning or sanitation of seed shall be limited to substances listed in Table 4.2 (Column 2) or Table 7.3 of CAN/CGSB-32.311."	7.4.7 For seed disinfecting and cleaning, only substances listed in Table 4.2 Column 2 or Table 7.3 can be used. These can include hydrogen peroxide, peracetic acid, and hot water (see water listing). Ascorbic acid and citric acid can also be used but are not used as often as the other substances for seed cleaning.
7.4.8 "When growing sprouts, shoots or microgreens the operator shall: a) use reusable and recyclable containers and flats whenever possible; b) reuse or recycle growing media whenever possible; c) only use substances listed in Table 4.2 (Column 2) of CAN/CGSB-32.311 if crop production aids are required; d) use appropriate equipment cleaners, disinfectants and sanitizers listed in Tables 7.3 and 7.4 of CAN/CGSB-32.311."	
7.4.9 Sprouts, shoots and microgreens product preparation "Wherever harvested organic product preparation takes place, 8.1 and 8.2 apply."	7.4.9 Preparation may include cleaning harvested product, cutting, rinsing, and packaging. See Clause 8 for requirements.
7.4.10 **Facility pest management** "Clause 8.3 applies to pest management practices in and around facilities."	7.4.10 It is best to keep the operation clean and prevent pests from entering the facility, as outlined in 8.3 of 32.310, thereby eliminating the need to use any substances listed in Table 8.2 of the PSL.

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