



UNDERSTANDING THE SUN+EARTH CERTIFIED STANDARDS: A GUIDANCE DOCUMENT



UNDERSTANDING THE SUN+EARTH CERTIFIED STANDARDS: A GUIDANCE DOCUMENT

Sun+Earth Certified is a nonprofit dedicated to promoting the principles of Earth Care, Human Empowerment, and Community Engagement within the emerging legalized cannabis industry.

© Sun and Earth Certification, Inc. 2020

www.sunandearth.org

TABLE OF CONTENTS

Foreword	4
1 – Administration.....	7
2 – Ecosystem Management.....	8
3 – Resource Management.....	10
4 – Genetically Modified Organisms and Nanotechnology	13
5 – General Requirements for Plant Production	13
6 – Seeds, Propagation Material and Seedlings.....	14
7 – Soil Conservation and Crop Rotation	15
8 – Management of Soil Fertility.....	17
9 – Pest, Disease, Weed, and Growth Management.....	22
10 – Processing and Manufacturing	24
11 – Ingredients and Processing Aids.....	24
12 – Processing Methods	25
13 – Packaging and Containers	26
14 – Cleaning, Disinfecting, and Sanitizing Processing Facilities.....	26
15 Facility Pest and Disease Control.....	27
16 – Worker Rights	27
17 – Contract and Negotiation.....	32
18 – Community Engagement.....	33
19 – Labeling	34
Annex Documents	36

FOREWORD

“Make your way carefully through these fields. Dragonflies and moths fly up in a flurry. Honeybees buzz from blossom to blossom. Part the leaves and you will see insects, spiders, frogs, lizards and many other small animals bustling about in the cool shade. Moles and earthworms burrow beneath the surface... And now look over at the neighbor’s field for a moment. The weeds have all been wiped out by herbicides and cultivation. The soil animals and insects have been exterminated by poison. The soil has been burned clean of organic matter and microorganisms by chemical fertilizers. In the summer you see farmers at work in the fields, wearing gas masks and long rubber gloves. These rice fields, which have been farmed continuously for over 1,500 years, have now been laid waste by the exploitive farming practices of a single generation.”

MASANOBU FUKUOKA – CONTRASTING NATURAL FARMING WITH MODERN INDUSTRIAL AGRICULTURE
IN HIS BOOK, *THE ONE STRAW REVOLUTION*.

There is an acre of Sun+Earth Certified cannabis growing on a hillside. It’s part of the state’s new legalized system for cannabis production and the farmers hold a license to grow. Some might say the ground there is too rocky, with too much clay, with soils too poor to farm. But when our cannabis farmers first arrived there, they were impressed with the sunny hillside, the south-facing slope, and the clean water. Emboldened by hard earned experience of how to transform poor soils into fertile ground, they got loans and bought the farm. Our farmers brought in a mixed herd of livestock—alpaca, goats, sheep, cows, and chickens. They used the livestock bedding and down wood from trees on their farm to create long mounded rows where they planted.

Our farmers understood how to accelerate soil building through mulching, promoting plant diversity, and by not disturbing the soil. They worked with nature to revitalize the land, to transform it into a green garden. It took several years of patient persistence and faith in nature. Now they make a living growing cannabis and their own food *under the sun and in the soil*.

No chemicals are used. The garden is alive. The cannabis plants are divine, powerful, and noble. In the summer, the garden buzzes with life – plants, pollinators, spiders, birds, moths, worms, butterflies, mice, snakes and humans. When walking though the garden, the farmers say to carry a long stick with which scare off the rattlesnakes that hunt mice and voles. There is no such thing as a pest or a weed in this garden. They dig up potatoes growing right next to the cannabis and occasionally pull and drop the morning glory that also grows there. Wild carrot and dandelion is allowed to flower, a boon to beneficial insects that feed on the cannabis aphid. Comfrey is allowed to flourish because of its tendency to absorb mineral nutrients that accumulate in its dark green leaves. In the winter, the glory recedes. There is less visible life and the garden decays, but breakdown is no less profound – natural nutrient cycling continues as always, invisible, inevitable, indomitable, and essential, both as a contrast, and as fuel for the rush of photosynthesis that will be Spring. It’s difficult to capture the essence of a Sun+Earth Certified farm in words but this description serves to highlight the type of cannabis operation that Sun+Earth was created to endorse.

The Sun+Earth Certified standards promote ethical cannabis production supported by the three pillars of Earth Care, Human Empowerment, and Community Engagement. This document is intended to provide additional guidance about the Sun+Earth Certified standards.

There are 19 sections and 3 annexes in this standard. Each section contains Core Requirements. In this guidance document, requirements are listed under the heading of **CORE REQUIREMENT** and then followed by guidance language under the heading of **ASSESSMENT CRITERIA DISCUSSION**. The guidance offered is meant to help people understand each Sun+Earth Certified Core Requirement more fully and as a jumping-off point for further exploration of the topics presented.

There are three tiers to this certification program—brown, green, and gold. The brown tier is for farms that are still in transition towards adopting regenerative, organic farming systems. Brown level farms can't use the Sun+Earth Certified logo. Both green and gold level farms can use the Sun+Earth Certified logo. The green level is for farms that meet all the Sun+Earth Certified Core Requirements. Most of the farms we certify fall into this green level category. The gold tier is for farms that meet all Core Requirements

plus all Gold Level Extra Requirements.

Gold Level Extra Requirements are called out with a text box and an image of a sunflower.

GOLD LEVEL EXTRA REQUIREMENT (OPTIONAL)



These gold level requirements are not as easy to achieve and serve as catalysts for evolution. In striving to meet the Gold Level Extra Requirements, a farmer will have to push, transform, and go beyond. Currently, all the Gold Level Extra Requirements fall under the pillar of Earth Care. However, as the Sun+Earth Certified standards evolve, additional Gold Level Extra Requirements will be added under the pillars of Human Empowerment and Community Engagement. The standards established for these two pillars are less defined than our Earth Care standards. This reflects the state of the cannabis industry, which is currently transitioning from an informal system to a tightly regulated legalized market. Sun+Earth Certified was designed to help regenerative, organic farmers gain recognition and space on the retail shelf for their products. The values of Human Empowerment and Community Engagement are just as important as Earth Care. We look forward to adapting the Sun+Earth Certified standards to match the needs of an ethical cannabis community by enhancing the Core Requirements relating to worker rights and community engagement. Similarly, we plan to evaluate our standards for manufacturers who are creating cannabis oils and edibles. If the current trends continue, soon roughly half the cannabis market will be represented by manufactured products. Manufacturers that source Sun+Earth Certified flower and trim to make their products should be supported and are invited to apply for our manufacturing certification. To create a truly green cannabis sector we need manufacturers to step-up and make products from farms that grow under the sun and in the soil. In fact, we need the entire cannabis community including retailers and consumers to step-up and support Sun+Earth cannabis.

In his book, ***Slow Money***, venture capital investor Woody Tasch asks us to slow-down and invest like our food, farms, and people matter. He exposes some of the absurdities of industrial farming and urges us to make conscious choices. He says, *“You wouldn’t use a backhoe to plant a garlic bulb. You wouldn’t use a factory to raise a pig. You wouldn’t spray poison on your food. You wouldn’t trade fresh food from family farms down the road for irradiated or contaminated or chemically laden or weeks old food from industrial farms halfway around the world. You wouldn’t create financial incentives for farms to become so large that they need GPS technology to apply chemical inputs with quasi-military precision. You wouldn’t design a system that gets only nine cents of every food dollar to the farmer. You wouldn’t allow topsoil to wash down the Mississippi River, replete with pesticides and fertilizers residues, creating a dead zone the size of Rhode Island in the Gulf of Mexico. You wouldn’t use fifty-seven calories of petro-energy to produce one calorie of food energy. No, no one ever sat down and designed such a system. Yet it is precisely such a technology-heavy, extractive, intermediation-laden food system that we now need to remediate and reform.”*

Like Masanobu Fukuoka, Tasch was writing about food, but it's the same story just a different crop with the industrial cannabis sector. Technology-heavy and extractive are good words to describe most of the legal cannabis operations in North America. Indoor cannabis production consumes enormous amounts of electricity to power lights, heaters, air conditioners, and dehumidifiers. As the prohibition of cannabis unravels, state and county governments appear to be more concerned by the smell of the plant than they are of the carbon footprint of massive indoor grows. Cannabis is perfectly designed to grow under the sun and in the soil, it takes a lot of energy to grow it inside a warehouse. Without the support for higher standards, it seems like cannabis will become a system even more illogical than the industrial food system.

We hope you join us to shape a cannabis marketplace that champions Earth Care, Human Empowerment, and Community Engagement. Collectively, we have the power to regenerate depleted soils, souls, and communities.

Sun+Earth Certified

A handwritten signature in cursive script that reads "Andrew Black".

Andrew Black,
Executive Director



1 – ADMINISTRATION

CORE REQUIREMENT 1.1

THE CERTIFIED OPERATION HAS A MANAGEMENT PLAN THAT REFLECTS ALL KEY ACTIVITIES OF THE SYSTEM.

ASSESSMENT CRITERIA DISCUSSION

Organic standards throughout the world require a written management plan for certified entities that describes key and critical processes and activities. A farm plan should accurately reflect what's happening on the farm or within a manufacturing facility and include enough details to illustrate compliance to the standard. The Sun+Earth Certified application for certification is designed to double as the operation's System Plan to fulfill core requirement 1.1. Any written plan or set of documents that contains similar information as the Sun+Earth Certified application documents may be used instead of the Sun+Earth Certified forms. However, for all operations, we must collect all basic information and signatures on Sun+Earth Certified affirmation pages including for the logo use agreement form. Sun+Earth Certified assesses the required system plans to conduct a thorough Initial Review to determine if the operation is eligible for the certification. The System Plan is used during the onsite audit to verify stated practices are in place. The System Plan helps anchor the audit and is checked onsite for accuracy and veracity. If the management plan doesn't accurately reflect what is happening on the ground, then an inspector should list the deficiencies in the inspection report so Sun+Earth Certified can request modifications be made to the system plan in question.

CORE REQUIREMENT 1.2

THE CERTIFIED OPERATION MAINTAINS DETAILED RECORDS THAT REFLECTS ALL KEY ACTIVITIES OF THE SYSTEM.

ASSESSMENT CRITERIA DISCUSSION

The recordkeeping part of the inspection is where we sit down and make sure the operation's records demonstrate compliance to the Sun+Earth Certified standards. We realize recordkeeping is always a work in progress and will work with an operation towards continuous improvement. However, below is a list of records to review during the inspection. If records are not available, poor quality, or incomplete, the inspector must report the deficiency in the inspection report.

- Receipts for purchased inputs (seeds, clones, potting soil, soil amendments, and pest management materials)
- Records of applications of allowed inputs (compost, soil amendments, pest control, etc.) by date, material, location, and rate of application
- Harvest records by date, quantity, crop, field/location
- Sales invoices
- Label information for all purchased fertility and pest management inputs

- Plant propagation records (if applicable)
- Copies of Employee Contracts that include all relevant anti-discrimination clauses and lists of benefits
- List of community engagement activities (date, organization, activity)

CORE REQUIREMENT 1.3

THE OPERATION FOLLOWS LOCAL GUIDELINES FOR CANNABIS PRODUCTION AND MAINTAINS A VALID LOCAL/STATE PERMIT TO PRODUCE, AND/OR PROCESS AND DISTRIBUTE CANNABIS.

ASSESSMENT CRITERIA DISCUSSION

Sun+Earth Certified can only certify operations that are legally permitted by their local jurisdiction. Sun+Earth Certified collects these permits during the Initial Review process. Permits are also reviewed and checked at inspection to ensure they are valid. Without a valid permit to participate in a state legal cannabis program Sun+Earth Certified will not inspect or certify an operation.

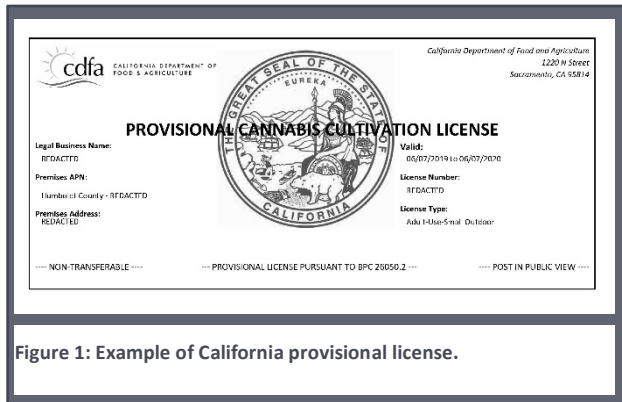


Figure 1: Example of California provisional license.

2 – ECOSYSTEM MANAGEMENT

CORE REQUIREMENT 2.1

FARM MANAGEMENT ACTIVITIES MUST PROMOTE BIODIVERSITY ON THE FARM.

ASSESSMENT CRITERIA DISCUSSION

Sun+Earth Certified is a program designed to highlight farms that are doing more than just monocropping. The inspector should observe and describe what other plants are farmed and why and how biodiversity is enhanced on a farm or on a property wide scale. The following is a list of farming practices that promote biodiversity and can serve to meet this standard:

- Maintain wild farm edges – the transition between cropped areas and non-cropped areas is left unmanaged or wild and serves as a refugia for diverse plant, insect, and animal life. Wild farm edges can also help to promote beneficial microbial and mycorrhizal associations between undisturbed wild land and farmed land.
- Restoration or revitalization of degraded habitat on the farm – Nearby or adjacent healthy native ecosystems can serve as a model for how to restore damaged areas or revitalize parts of the farm that were overmanaged in the past. Landscaping with perennial native trees, shrubs, and grasses.

- Cover cropping and pollinator plants – Non-invasive plants that attract and support pollinators help increase biodiversity on the farm and can help attract beneficial insects that help to control crop pests. For example, pollinator plants can support populations of lacewings, wasps, predator mites, and lady bugs.
- Bat houses and hawk perches – Creating habitat for bats and predator birds is a way to support animals that can control mosquitos and rodents on the farm in a non-toxic natural way.
- Intercropping – A farm that plants vegetables, herbs, or flowers between cannabis plants or adjacent to cannabis plants can effectively increase plant and insect biodiversity within the farmed area. A higher diversity of plants within the cannabis planting area equates to a diversity of plant exudates at the plant root zone and potentially higher diversity of microbial life, communication between plants, richer diversity of insect life. Different plants have different root diameters and rooting structure which increases the amount of available habitat niches within the soil root zone and can further increase soil life and overall farm resiliency.



Figure 2: Foreground shows a vigorous row of comfrey planted for bioaccumulation of plant nutrients and as a strategy to promote beneficial insect habitat. Notice mulching with straw and wild farm edges. Photo of Green Source Gardens 2019.

CORE REQUIREMENT 2.2

FARMING PRACTICES MUST SUPPORT ECOSYSTEM HEALTH AND PROTECT HIGH CONSERVATION VALUE AREAS.

ASSESSMENT CRITERIA DISCUSSION

These areas have been defined as those that have high levels of “biological, ecological, social or cultural values which are outstandingly significant or critically important at the national, regional or global level.” (HCV Resource Network; <https://www.hcvnetwork.org/about-hcvf>). Sun + Earth Standard 2.2 is included to promote reasonable farming practices that support the overall health and functioning of the natural ecosystem of which the farm is a component. The threshold for being categorized as a high conservation value area is high and applies to land uses that affect areas that are critically important at the national or regional level. An example of an area that has been identified as a high conservation value area are parts of the Western Indonesian rainforests that hold endangered species of primates, plants, and indigenous cultures. We don't anticipate receiving certification requests from farmers growing cannabis in areas currently thought of as high conservation value areas. However, cannabis farming practices that threaten sensitive areas like fish bearing streams, wetlands, jungles, old growth forests, and intact ecosystems can be restricted and/or prohibited by Sun + Earth Standard 2.2. The Sun+Earth Certified

inspector and the farmer must discuss the concept of supporting ecosystem health and protecting areas on the farm that are fragile. This requirement emphasizes that our farming practices are part of a larger ecosystem and encourages deeper thinking about the role the farm plays within the natural community. Most organic farming standards have language that attempts to prevent the contamination of soils and organic crops (see NOP 205.202 and 205.203), and the protection of "high conservation value areas" is something the International Federation of Organic Farming Movements (IFOAM) has identified as a "Common Objective and Requirement of Organic Standards" (COROS).

CORE REQUIREMENT 2.3

FARMERS WILL MONITOR NON-NATIVE SPECIES THAT DISRUPT THE NATURAL ECOSYSTEM AND WILL PURSUE MANAGEMENT EFFORTS, WHEN NECESSARY.

ASSESSMENT CRITERIA DISCUSSION

No herbicide is allowed to be used to control invasive plants. The inspector must self-educate about non-native, noxious weeds within the region where the farm is located and be able to identify if populations of these plants exist on the farm. The inspector must interview the farmer about which non-native, invasive weeds are problematic on the farm property and what is done to control them. Inspectors should use the USDA list for Introduced, Invasive, and Noxious Plants in the state where they are conducting the inspection to assess the threat of non-native invasive weeds on the farm, <https://plants.usda.gov/java/noxiousDriver>. Monitoring and managing infestations of invasive species has also been identified as a Common Objective and Requirement of Organic Standards by IFOAM. The concept of managing non-native species and/or invasive species is controversial, especially in the Americas where there has been slaughter and displacement of indigenous people and plant and animal species for hundreds of years. But on the context of a farm, people can attempt to understand the local ecosystem and monitor invasive, nonnative species that if left unchecked could diminish the resiliency of the local watershed and ecosystem. For example, in certain areas along the west coast of the US, plants such as Canadian Thistle, Scotch Broom, Yellow Star Thistle, English Holly, Knapweed, and Himalayan Blackberry have all been identified as nonnative plants that have the potential to disrupt and degrade native ecosystems. However, these plants also have their own inherent value, some as nectar sources for pollinators others as seed or fruit sources for wildlife. Core requirement 2.3 doesn't mean that weeds can't exist on a Sun+Earth Certified farm on the contrary in moderation fast growing weeds can help increase biodiversity on a farm and within soils. The requirement asks for honest assessment and management of invasive species if they are out of hand.

3 – RESOURCE MANAGEMENT

CORE REQUIREMENT 3.1

IRRIGATION SYSTEMS ARE APPROPRIATELY DESIGNED TO ENSURE WATER CONSERVATION, BASED ON SITE SPECIFIC CONDITIONS AND AVAILABLE RESOURCES. WATER USAGE MUST BE DOCUMENTED.

ASSESSMENT CRITERIA DISCUSSION

Understanding the Sun+Earth Certified Standards

Irrigation water can come from a variety of sources and should be described in the operation's System Plan. Common irrigation practices that conserve water include drip irrigation and timed watering. The inspector should discuss water use and describe in the inspection report what efforts are taken to conserve water. Farms that take water directly from streams or rivers should demonstrate a valid water right and intake pipes should be checked during inspection to ensure they have screens adequate to prevent injury to fry and other aquatic life. Farms taking water from Water District Irrigation Canals must ensure canals on their farm on not sprayed with herbicide and that they do not irrigate less than 24 hours after Water District application of algicides or other treatments - farms should have a letter from the Irrigation District confirming canals are not treated with algicides, etc. or farms can coordinate with Irrigation District so no irrigation within 24 hours of treatment. Farms must record the amount of water used. This can be an estimate based off irrigation time (gallons delivered per unit time) or actual quantity used per watering, or via water metering.

Irrigation water should be coming from legal sources according to water rights for each parcel. Conservation of water has to be assessed on a case by case basis. Properly installed drip irrigation systems combined with mulching can help to minimize irrigation requirements. By including a requirement for water conservation, it means farmers that works towards this regenerative cannabis certification will need to consider how much water they use and find ways to refine their irrigation practices. Water catchment systems, Hügélkultur, bioswales, mulching, drip irrigation, and timing of irrigation can all be used to conserve water on the farm.



Figure 3: Note drip irrigation visible within a harvested row and irrigated insectary row of Cosmos flowers. Photo of Waterdog Herb Farm

CORE REQUIREMENT 3.2

PLANTS ARE GROWN IN NATURAL SUNLIGHT. SUPPLEMENTAL LIGHTING IS ONLY ALLOWED DURING PLANT PROPAGATION. CARBON ACCOUNTING AND OFFSETTING OF ENERGY CONSUMPTION FROM ANY SUPPLEMENTAL LIGHTING IS MANDATORY. STRUCTURES USED FOR PLANT PROPAGATION WITH SUPPLEMENTAL LIGHTING MUST BE MANAGED TO PREVENT LIGHT POLLUTION BETWEEN SUNSET AND SUNRISE.

ASSESSMENT CRITERIA DISCUSSION

The Sun+Earth Certified program is for cannabis that was produced under the sun. Cannabis flower produced with artificial lighting is not eligible for certification. The auditor must assess all cannabis growing areas on the farm and verify that artificial lighting is not used. However, keep in mind that core requirement 3.2 allows for artificial lights for plant propagation. For example, solar-powered artificial lighting during early vegetative stages to prevent seedlings from going to flower is an example of an allowed use of supplemental lights. The allowance for plant propagation includes plants that are cloned from overwintered mother plants or plants grown from seed. Cloned plants allow a grower to offer consistent phenotypic expression of cultivars that may work well in their microclimate, under their unique growing system, and in their markets.



3.2 GOLD LEVEL EXTRA REQUIREMENT (OPTIONAL)

PLANTS ARE GROWN IN NATURAL SUNLIGHT WITHOUT SUPPLEMENTAL LIGHTING.

GOLD LEVEL ASSESSMENT CRITERIA DISCUSSION

To meet this gold level extra requirement, a farmer can't use any supplemental lighting. This means using only seeds to produce seedlings without grow lights. Growing cannabis by seed each year means less phenotypic stability but more genetic variation and potentially novel traits. We want to promote cannabis grown from seed because it is the natural production method that uses the least amount of energy and likely has a lower carbon footprint than making clones. Seedlings and clones from seedlings can be grown without artificial lighting with extra effort made by the farmer. This gold level standard is meant to especially highlight farms that don't use any artificial lighting.

CORE REQUIREMENT 3.3

FARM PRACTICES SHOULD SEQUESTER CARBON AND REDUCE CARBON FOOTPRINT.

ASSESSMENT CRITERIA DISCUSSION

One of the outcomes of regenerative organic farming is sequestration of atmospheric carbon. This natural process is accelerated with no-till farming. Sun+Earth Certified farms are asked to build soils over time through any natural farming practices that restores and regenerates the land. Inspectors should observe farm management practices that help to sequester carbon. This can occur through mulching and cover cropping and through burying carbon to create Hügelkultur planting beds. This core requirement allows flexibility for farms to sequester carbon and reduce their carbon footprint according to their unique microclimates and circumstances.

4 – GENETICALLY MODIFIED ORGANISMS AND NANOTECHNOLOGY

CORE REQUIREMENT 4.1

CULTIVATION DOES NOT USE GENETICALLY MODIFIED ORGANISMS, GENETIC ENGINEERING, OR NANOTECHNOLOGY.

ASSESSMENT CRITERIA DISCUSSION

The risk of contamination of GMO and nanotechnology is low when approved organic inputs are used that have been reviewed and approved by OMRI, WDSA Organic, or CDFA OIM. However, this standard prohibits the use of genetically modified crop residues that are often used as soil amendments in organic farming such as conventional soybean meal, alfalfa meal, and cottonseed meal, etc. It also prohibits the use of genetically modified microorganisms. During all stages of the certification, (Initial Review, Inspection, Final Review) cultivation practices are reviewed and double checked, no cultivation inputs are allowed that are GMO or considered as nanotechnology. The prohibition on genetically modified organisms, genetic engineering, and nanotechnology aligns with the precautionary principle, which is a general strategy of caution when dealing with new, unproven, and potentially harmful technology or scientific innovations.

5 — GENERAL REQUIREMENTS FOR PLANT PRODUCTION

CORE REQUIREMENT 5.1

CROP MUST BE PLANTED IN SOIL THAT HAS BEEN FREE OF PROHIBITED SUBSTANCES FOR NO LESS THAN THREE YEARS PRIOR TO HARVEST OF THE CROP, AND SOIL SUITABILITY MUST BE ESTABLISHED THROUGH SOIL TESTING FOR PESTICIDE RESIDUES.

ASSESSMENT CRITERIA DISCUSSION

Growers must report previous land use and land history as part of the Intake Form/System Plan they fill out prior to inspection. The inspector must interview the farmer to verify the veracity of the reported land history and can also use observation skills and audit input records and receipts for purchased inputs to corroborate reported land history. This is the standard time period used in organic standards for land that is transitioning away from the use of synthetic fertilizers and pesticides. The three-year transition period can be found in organic standards throughout the world including USDA Organic (NOP), EU Organic (EC 834/2007), Canadian Organic Regime (COR), the Mexican Law on Organic Productions (LPO), and IFOAM standards, etc. Before federal systems of organic certification, some private organic certification programs may have had longer, 5-year transition periods. During

inspections, we will be taking soil samples of cropped areas and sending them to Pacific Agricultural Labs for pesticide residue analysis. The analysis covers the residues in this list, <http://www.pacaglab.com/pdfs/MR-Soil%20Profile-4.5.17.pdf>.

CORE REQUIREMENT 5.2

MEASURES ARE TAKEN TO AVOID PRODUCT CONTAMINATION.

ASSESSMENT CRITERIA DISCUSSION

The inspector must report on buffer zones that have been established to prevent unintended contamination from adjacent land uses. Farms adjacent to private timber companies must seek documentation that aerial or hand spraying of herbicides will not occur in a manner that will contaminate cannabis crops. Farms adjacent to conventional farm must identify potential contamination threats and seek to mitigate them through communication with nearby neighbors and other practices such as planting buffer rows of corn, sunflowers, fast growing bushes or trees, etc. The inspector must inspect post-harvest drying, curing, and storage on the farm and ensure the cannabis is not exposed to adverse conditions that could result in fungal, bacterial, or pest/rodent contamination. The inspector must observe storage areas and packing areas are free of contamination threats.

6 – SEEDS, PROPAGATION MATERIAL AND SEEDLINGS

CORE REQUIREMENT 6.1

SEEDS AND/OR CLONES ARE ACQUIRED FOLLOWING THE SEED/CLONE ACQUISITION HIERARCHY TO THE BEST ABILITY OF THE CULTIVATOR. (SEE ANNEX 3).

ASSESSMENT CRITERIA DISCUSSION

Seeds and clone sources must be documented and reported on by the inspector. Receipts for purchased seed and clones can be used as evidence of a source.



3.2 GOLD LEVEL EXTRA REQUIREMENT (OPTIONAL)

THE FARM IS ACTIVELY PARTICIPATING IN SEED SAVING OF CANNABIS AND OTHER CROPS. THE FARM PARTICIPATES IN A SUN & EARTH SEED CIRCLE.

GOLD LEVEL ASSESSMENT CRITERIA DISCUSSION

Farm activity records and photos can be used to confirm on-farm produced seed and clones. Emails, mail, farm activity records, video, photos, etc. can be used to corroborate the sharing of cannabis seeds between Sun+Earth Farms. Saving seeds and selecting for cultivars that thrive on the farm is one of the fundamental acts of being a farmer. Farm resiliency and self-sufficiency are enhanced through seed saving.

CORE REQUIREMENT 6.2

SEEDS MUST NOT BE CHEMICALLY TREATED OR GENETICALLY MODIFIED.

ASSESSMENT CRITERIA DISCUSSION

Inspectors must verify and report on seed sources and planting stock. Seed treatments (fungicides/insecticides) are legally required to be colored and in the USA and are most often blue or pink. Inspectors must be careful to inspect seed stored on the farm and keep an eye out for treated seed. No cannabis is currently genetically modified and approved for use in the US. But inspectors should continue to ask growers about their seed and plant sources. Inspectors should educate themselves on GMOs and on new types of CRISPR technology and how it might be used for genetic modification to plants. Inspectors should verify that if the following seeds are used, they are not sourced from companies that offer genetically modified varieties:

Alfalfa	Papaya
Canola	Potato
Corn	Soy
Cotton	Sugar Beet
Tobacco	

7 – SOIL CONSERVATION AND CROP ROTATION

CORE REQUIREMENT 7.1

THE FARM MUST USE COVER CROPS, CROP ROTATION, INTERCROPPING, OR OTHER DIVERSE PLANTING SCHEMES.

ASSESSMENT CRITERIA DISCUSSION

If you look back at the literature and agronomic studies about conservation agriculture, you'll find that researchers have identified three main practices for increasing organic matter on a farm--minimizing tillage, crop rotation, and mulching. Implemented individually on the farm, each practice can help to build soil and reduce erosion. When these three practices are implemented concurrently on a farm and consistently, studies show dramatic increases in soil organic matter and soil quality over time. This requirement is an attempt to ensure that regenerative cannabis farming includes planting other plants in addition to cannabis, either in a crop rotation or through intercropping. The point here is to recognize

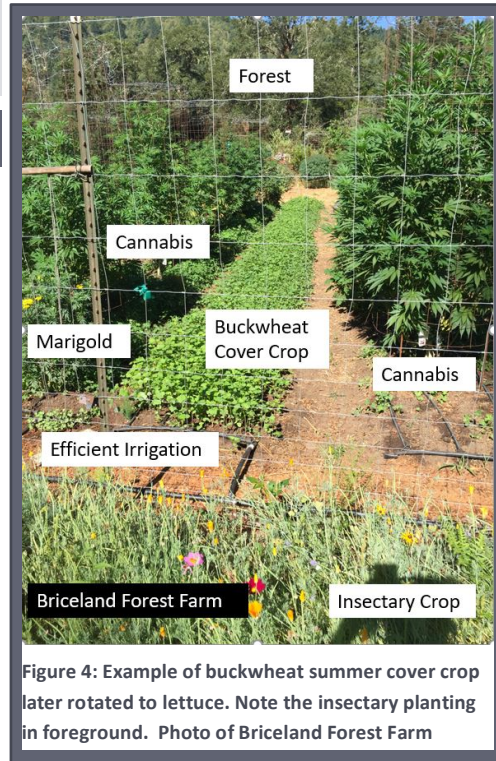


Figure 4: Example of buckwheat summer cover crop later rotated to lettuce. Note the insectary planting in foreground. Photo of Briceland Forest Farm

that within natural ecosystems there are relatively few monocultures and that monocultures tend to maintain or degrade soils over time rather than renew them. The concept of a crop rotation for many cannabis farms that are focused on maximizing yields within a limited flowering canopy size could be difficult to imagine. Intercropping cannabis with insectary plants, food crops, and cover crops might also serve the same purpose of a traditional crop rotation. Crop rotations are important to break pest and soil pathogen cycles, additionally soil quality and water filtration is enhanced when crops with varied root diameters are grown. Fall cover crops commonly used in North America include winter rye, vetch, daikon radish, crimson clover, peas, etc. Warm season cover crops often include buckwheat, Sudan grass, millet, flax. The inspector should verify that the farm uses some form of cover cropping, intercropping, or other planting technique to ensure plant biodiversity remains high on the farm and that cannabis isn't the only planting. Crop rotations generally help an organic farm thrive. But local and state regulations don't always allow a cannabis farmer to use a traditional crop rotation because cannabis canopy space is regulated and set to a specific field location. In lieu of a traditional crop rotation, Sun+Earth Certified farm may use intercropping, cover crops and companion planting. Where crop rotation is not possible due to cannabis license restrictions, a system of polyculture, in which more than one species is grown at the same time and place in imitation of the diversity of natural ecosystems can be implemented.

CORE REQUIREMENT 7.2

THE FARM MUST DIVERSIFY CROP PRODUCTION TO AVOID MONOCULTURE.

ASSESSMENT CRITERIA DISCUSSION

Sun+Earth Certified farms must consider the role their farming plays within the larger ecosystem. To create a thriving, vibrant landscape farmers can work to enhance biodiversity of plants within their cropping systems. Increasing the plant biodiversity within the farm makes visible and invisible contributions to the natural community. An inspector can use farm records and farm photos and farm observations to verify that the farm is not practicing plantation style agriculture with large tracts of monocultures. Plantation agriculture happens at large scales and is inherently an exploitative endeavor. The Atlantic Slave Trade was started because of the monocropping of sugar, cotton, and tobacco - crops that were subsequently processed into commodity products that were traded around the world. To understand how agricultural systems of monocropping of commodity crops worked to enslave and exploit people, inspectors can read the books [Empire of Cotton](#), [Sweetness and Power](#), and [Slavery By Another Name](#). For larger scale plantings of industrial hemp, Sun+Earth Certified farmers should explore strip cropping where hemp is planted between blocks of other herb crops such as calendula and echinacea or food crops such as potato.

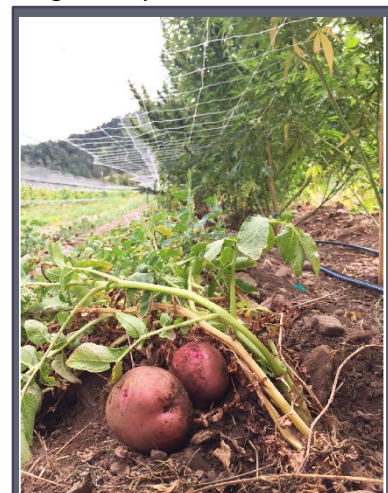


Figure 5: Potatoes were planted on both sides of the cannabis row. Photo of East Fork Cultivars

CORE REQUIREMENT 7.3

FARMING PRACTICES BUILD SOIL AND IMPROVE THE BIODIVERSITY, ORGANIC MATTER, FERTILITY AND STRUCTURE OF THE SOIL.

ASSESSMENT CRITERIA DISCUSSION

This requirement can be achieved in many ways. The inspector should verify through observation and farm activity records that farming practices include some combination of the following: mulching with farm produced plant residue, plant residue composting, cover cropping, companion planting, application of compost teas, application of plant ferments, incorporation of livestock manures or composted manure.

CORE REQUIREMENT 7.4

FARM PRACTICES DO NOT CONTRIBUTE TO SOIL EROSION AND LAND DEGRADATION. THE FARM SYSTEM DOES NO HARM AND ALSO ENHANCES HEALTH AND WELLBEING OF THE ENTIRE ECOSYSTEM.

ASSESSMENT CRITERIA DISCUSSION

The inspector should ensure that farming is not done on steep slopes. If farming is done on slopes greater than 10% the inspector should flag it as a concern. Terracing may be required to prevent soil erosion and to prevent run-off from applied manure and composts. Terrace farming is an ancient practice that can control soil erosion and conserve water. For additional information about what to consider when creating a successful terraced farmscape, see https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046935.pdf and <http://www.fao.org/3/ad083e/AD083e06.htm>. The language, "the farm system does no harm and also enhances health and wellbeing of the entire ecosystem" is aspirational and exists to encourage farmers to perceive their farm as an impactful component of a much larger landscape.

8 – MANAGEMENT OF SOIL FERTILITY

CORE REQUIREMENT 8.1

BARE SOIL IS AVOIDED, AND LAND RETAINS COVER YEAR-ROUND. IF ALTERNATIVE METHODS PROVE INEFFECTIVE, SOIL DISTURBANCE EVENTS ARE ACCEPTABLE FOR PLANTING CROPS, MANAGING COVER CROPS, AND FOR DRY FARMING.

ASSESSMENT CRITERIA DISCUSSION

The inspector should observe and discuss tillage practices and methods used to avoid bare soil. The point here is that regenerative farming means using no-till and reduced-till systems for crop production as much as possible. With Cannabis, successful no-till farming is possible and effective. An excellent examples of no-till systems that work for cannabis is Hügelskultur farming. If you don't know what Hügelskultur is, please self educate. It involves burying wood and other carbon sources with plant matter like straw mulch and other crop residue. In cannabis production systems that include vegetable production for farmers' markets, it can be challenging to do Hügelskultur

beds-- direct seeding can be difficult in mulch and within hügelkultur beds due to increased weed pressure. Cannabis is a very fast-growing sturdy plant that is less affected by weed pressure than many vegetable crops cultivated for market, like carrots, lettuce, and celery. During our Pilot Program certification of 2018, farms used mulch and compost to avoid bare soil and provide habitat for microorganisms and to conserve water. Some farms had sophisticated cover cropping with summer buckwheat and light occlusion tarps to snuff the cover crop out and then planted lettuce for market without resorting to rototilling. We want to encourage mulching systems and no-till practices without completely prohibiting tillage since no-till cropping systems, especially for vegetable production, are still being worked out.

CORE REQUIREMENT 8.2

CROPS MUST BE GROWN IN LIVING SOIL. WHEN NATIVE SOIL IS NOT ADEQUATE, A FARMER CAN PETITION TO USE IMPORTED GROWTH MEDIUM IF IT MEETS ORGANIC STANDARDS AND IS MANAGED ACCORDING TO SUN AND EARTH STANDARDS FOR AT LEAST ONE YEAR. IMPORTED GROWTH MEDIUM THAT DOES NOT MEET ORGANIC STANDARDS IS PROHIBITED, IT MUST BE MANAGED ACCORDING TO SUN AND EARTH STANDARDS FOR THREE YEARS BEFORE IT CAN BE ELIGIBLE FOR CERTIFICATION.

ASSESSMENT CRITERIA DISCUSSION

The inspector will observe cropped areas and ensure that native soils are in use. Regarding the use of potting soil, farm activity records and receipts for purchased potting soil can help establish when it was imported onto the farm. We are trying to encourage use of native soils but also allowing for raised bed systems where potting soil has been reused over many cycles or was brought in to build fertility in marginal soils.



8.2 GOLD LEVEL EXTRA REQUIREMENT (OPTIONAL)

CROPS ARE GROWN IN NATIVE, LIVING SOIL.

GOLD LEVEL ASSESSMENT CRITERIA DISCUSSION

Farms that plant into native farm soils are eligible to achieve this gold level extra.

CORE REQUIREMENT 8.3

POTTING SOIL IS ACCEPTABLE FOR SEEDLING AND CLONE PROPAGATION; POTTING SOIL MADE FROM ON-FARM RESOURCES AND NATIVE SOIL SHOULD BE USED WHENEVER POSSIBLE.

ASSESSMENT CRITERIA DISCUSSION

The inspector will verify how potting soil is used on the farm. Use of potting soil should be mentioned and described as part of the Farm Plan. The point here is to emphasize that farms shouldn't be bringing in potting soil every year to grow their crops. Sun+Earth Certified farms must figure out how to build soil over time and use existing resources whenever possible. If a farm wants to create raised beds, they should look for ways to re-use potting soil from their seedling and cloning systems or experiment with using on-farm resources such as compost, leaf litter, and native soils. If a farm is expanding a raised bed planting system, buying in a fresh mix of potting soil should be discussed with Sun+Earth Certified.



8.3 GOLD LEVEL EXTRA REQUIREMENT (OPTIONAL)

SEEDLINGS AND CLONES ARE PROPAGATED IN SOIL MIXED ON THE FARM WITH ON-FARM RESOURCES AND NATIVE SOILS.

GOLD LEVEL ASSESSMENT CRITERIA DISCUSSION

Potting soil is not purchased. It is made from on farm compost and garden soil or other on - farm resources. This can be verified at inspection. The inspector should ensure that propagation techniques are discussed and confirmed.

Purchased potting soils often contain peat moss, perlite, vermiculite, and coco coir. Each of these ingredients are usually imported from far flung places or have some sort of intensive manufacturing and distribution process. It's not easy to make your own seedling mix, but it can be made from on-farm compost and native soils. Some of the challenges include getting the soil aggregates correct for adequate drainage to reduce risk of fungal pathogens that cause "damping off". However, many farmers discover that creating a soil mix from farm made compost and vermicastings causes seeds to quickly pop and transform into vigorous seedlings.



Figure 6: Seedlings in soil mix made on the farm from compost and native garden soils. Photo of Green Source Gardens

CORE REQUIREMENT 8.4

COMPOSTING SYSTEMS MUST BE USED ONSITE. OFF-FARM MANURE AND SUPPLEMENTAL COMPOST MUST BE SOURCED LOCALLY.

ASSESSMENT CRITERIA DISCUSSION

To meet the core requirement a farm must compost appropriate material onsite and may source compost feedstock from local resources as needed. This goes beyond organic regulations because current organic standards don't make on-farm composting mandatory. However, composting plant residue and livestock manure is regenerative and could also include vermicomposting. There is no restriction in this regenerative standard about how the compost is made. This gives regenerative farmers flexibility. The USDA NOP organic standard has very specific requirements for compost production, which generally describe carbon and nitrogen ratio levels and temperatures that compost piles must heat up to for a specific time period. Good compost usually will fall within the general compost production practices defined in NOP 205.203. The other major organic standard, the EU Organic rules, allow for compost but don't prescribe a certain production method for the compost production. The EU also allows for vermicompost without any restrictions on how it is made. The USDA NOP organic rules restrict the use of animal manure by requiring a preharvest interval (PHI) of 120 days for crops where manure was applied and come into contact with soil or soil particles, and a PHI 90 days for crops that don't come into contact with soil or soil particles (for example fruit trees). It's interesting to note that the Organic Food Productions Act requires a minimum preharvest interval of 60 days, but when they passed the USDA NOP organic regulations in 2002 they required longer pre-harvest intervals. At that time, the USDA noted that the reason was for food safety and yet they acknowledged no consensus about the safety or non-safety of using manure for crop production. The EU organic rules allow for the use of animal manure up to 170 kg of Nitrogen per hectare per year, and manure from factory farming is prohibited. Most livestock manure is not high in nitrogen with the exception of poultry manure and fresh guano. Generally speaking, the EU restriction on manure use is set high enough that a farmer could use plenty of manure to grow crops. The Sun+Earth Certified standard allows for the use of manure and doesn't place any restrictions around the use. Farmers have been using manure to keep fields fertile for thousands of years. The timing of the application of manure products is important and should occur when fields aren't frozen and when leaching is less likely to occur.



8.4 GOLD LEVEL EXTRA REQUIREMENT (OPTIONAL)

COMPOST IS PRODUCED ONSITE WITH PLANT OR CROP RESIDUE THAT COMES FROM THE FARM AND/OR WITH MANURE FROM ON-FARM, NON-CAGED LIVESTOCK.

GOLD LEVEL ASSESSMENT CRITERIA DISCUSSION

The gold level requires the farm to only use compost feedstock sourced from the farm, such as plant residue and manure from livestock managed on the farm. This means a farm is only composting materials they have onsite and not buying or importing resources from off-farm. Farm activity records should record materials/ingredients used to make compost and when compost piles were created and where and how much compost was applied.

CORE REQUIREMENT 8.5

SOIL FERTILITY AND PLANT HEALTH INPUTS MUST BE PRODUCED ON THE FARM THROUGH BIOLOGICAL PROCESSES TO PROMOTE MEASURABLE INCREASES IN SOIL ORGANIC MATTER OVER TIME. THE USE OF NON-MANURE SOIL FERTILITY INPUTS MANUFACTURED OFF-FARM SHOULD BE MINIMIZED AND MUST CONTRIBUTE TO LESS THAN HALF OF THE TOTAL MATERIALS APPLIED.

ASSESSMENT CRITERIA DISCUSSION

Soil fertility and plant health is often supported through the use of homemade plant ferments, manure ferments, compost, fish waste ferments, biodynamic preparations, plant residues, and plant teas. Farm records of the application of inputs will be used to assess compliance to standard 8.5. At a minimum, farms must track which materials are applied by location, quantity, square footage of area, and date of application. Sun+Earth Certified recordkeeping templates for tracking application of inputs are available. The Sun+Earth Fertilizer Calculator will be used to determine total amounts of soil inputs applied on the farm by quantity, location, area applied, date, material, and NPK value. To assess compliance to this core requirement, the contributions from livestock, application of composts, on-farm mulches, and other on-farm produced resources should be included as well as all fertility inputs that are imported from off farm sources.



8.5 GOLD LEVEL EXTRA REQUIREMENT (OPTIONAL)

THE USE OF NON-MANURE SOIL FERTILITY INPUTS MANUFACTURED OFF-FARM ARE MINIMIZED AND CONTRIBUTE TO NO MORE THAN THE EQUIVALENT OF 50 LBS/ACRE EACH OF NITROGEN, PHOSPHORUS, AND POTASSIUM PER YEAR.

GOLD LEVEL ASSESSMENT CRITERIA DISCUSSION

Inspectors will use the Sun+Earth Fertilizer Calculator to determine how much NPK is applied to the farm from non-manure soil fertility inputs. Farms must provide rates of application of non-manure soil fertility inputs. There is more flexibility on the use of manure as a fertility input within the Sun+Earth Standard because we are trying to encourage getting livestock back onto farms. Although it can be challenging to incorporate livestock into farming systems on small regenerative farms, livestock can help provide a rich natural source of fertility--manure can be applied directly to fields or composted to build soil. Livestock manure and bedding must be managed to prevent the risk of leaching into waterways, etc. Manure and compost piles should be covered or tarped to prevent leaching from rain.

CORE REQUIREMENT 8.6

Understanding the Sun+Earth Certified Standards

CULTIVATION METHODOLOGY USES ONLY NATURALLY OCCURRING MINERAL FERTILIZERS AND ONLY AS A SUPPLEMENT TO BIOLOGICALLY BASED FERTILITY METHODS, BASED ON SOIL OR PLANT TISSUE TEST RESULTS.

ASSESSMENT CRITERIA DISCUSSION

Naturally occurring mineral fertilizers include mined materials listed on Annex 1. If they are used, a soil fertility test must be on hand and reviewed to justify their use and the general strategy of applying natural minerals to existing farm soils.

CORE REQUIREMENT 8.7

**ONLY APPROVED PRODUCTION INPUTS MAY BE USED.
(SEE APPROVED MATERIAL LIST ANNEX 1)**

ASSESSMENT CRITERIA DISCUSSION

During the initial review, inspection, or final review of a farm certification request, farm inputs including soil amendments, potting soil, pesticides, production aids, etc. are thoroughly evaluated to ensure they meet the Sun + Earth Certified minimum requirements. If a material is not listed on Annex 1 of the Sun + Earth Certified standards, then it is not allowed for use. If the material in question is allowed in organic farming per the USDA NOP National list 205.601 or is listed as approved with OMRI, WSDA Organic, or CDFA OIM but is not allowed per Sun+Earth Certified Annex 1, then the material is considered a Low Risk Material and the farm will be asked to stop using the material and confirm in writing (email okay) not to use the material in question. For example, many synthetic micronutrients are allowed for use per USDA NOP 205.601 but not listed on Annex 1 of the Sun + Earth Certified Standards. In another example, the pesticide Spinosad is allowed in USDA Organic farming but is not Listed on Annex 1 of the Sun+Earth Certified standard. If during the certification process it is discovered that such a material has been used, the certifier should request that the farmer immediately cease using the product and desist from using it in the future.

CORE REQUIREMENT 8.8

FIELD BURNING IS NOT ALLOWED AS A FIELD PREPARATION TECHNIQUE. HOWEVER, CROP RESIDUE CAN BE BURNED TO CONTROL PLANT PESTS AND DISEASE.

ASSESSMENT CRITERIA DISCUSSION

Field observations and farm activity records should be reviewed to verify that fields are not being burned without justification as plant pest or disease control. Field burning has not traditionally been used to prepare fields for cannabis production.

9 – PEST, DISEASE, WEED, AND GROWTH MANAGEMENT

CORE REQUIREMENT 9.1

Understanding the Sun+Earth Certified Standards

INTEGRATED PEST MANAGEMENT STRATEGIES ARE USED TO PREVENT AND CONTROL PESTS AND DISEASES, INCLUDING REGIONALLY ADAPTED CULTIVARS.

ASSESSMENT CRITERIA DISCUSSION



Pest control begins with selecting plant cultivars that display natural resilience to cannabis pests. During the Initial Review of an applicant's Sun+Earth Farm Plan, strategies for preventing common cannabis pests like aphids, spider mites, hemp russet mites, broad mites, caterpillars, powdery mildew, and botrytis, must be described in detail and assessed for compliance to the Sun+Earth Standard.

During the inspection, the inspector will verify that IPM strategies are being implemented. Beneficial insect habitat must be available and promoted on the farm. Techniques that also attract native pollinators to increase beneficial insects include practices like planting insectary plants near cannabis crops, conservation of existing beneficial insect habitat on the farm, hedgerows of flowering shrubs, and flowering cover crops. For

more information about how to promote habitat for beneficial insects, the Xerces Society has an excellent guidance publication that can be downloaded, here https://xerces.org/wp-content/uploads/2016/10/Habitat-Planning-Beneficial-Insects_Feb2017_web.pdf. In addition to creating more habitat for beneficial insects, producers can introduce beneficial insects and many growers have had great success by placing predator mite sachets on plants to prevent spider mites and hemp russet mites. Pest prevention also means supporting cannabis plants with healthy living soils that help them thrive and adequate, not overwatering.

CORE REQUIREMENT 9.2

PEST CONTROL MATERIALS ARE LIMITED TO THOSE LISTED ON THE APPROVED LIST (ANNEX 1).

ASSESSMENT CRITERIA DISCUSSION

Pest control materials that are allowed per Annex 1 include: beneficial insects, biopesticides, organic soap, and sticky traps. Pest control materials that are allowed as a last resort per Annex 1 include: essential oils, horticultural oil, potassium bicarbonate, sulfur. Any pest control material used must be on Annex 1 and also approved for use in organic farming by OMRI, WSDA Organic, or CDFA OIM. During the initial review, inspection, or final review of a farm certification request, farm inputs including pesticides are thoroughly evaluated to ensure they meet the Sun + Earth Certified minimum requirements. If a pest control material is not listed on Annex 1 of the Sun + Earth Certified standards, then it is not allowed for use. If the material in question is allowed in organic farming per the USDA NOP National list 205.601 or is listed as approved with OMRI or WSDA Organic but is not allowed per Sun+Earth Certified Annex 1, then the material is considered a Low Risk Material and the farm will be asked to stop using the material and confirm in writing (email okay) not to use the material in question. For example, there are pesticide products with the active ingredient of Spinosad that are approved by OMRI or WSDA Organic and generally allowed per USDA NOP 205.601, but Spinosad is not Listed on Annex 1 of the Sun+Earth Certified standard. If during the certification process it is discovered that such a material has been used, the certifier should request that the farmer immediately cease using the product and desist from using it in the future.

10 – PROCESSING AND MANUFACTURING

CORE REQUIREMENT 10.1

DOCUMENTED PROCEDURES THAT PREVENT AND MINIMIZE RISK OF CONTAMINATION ARE IN PLACE.

ASSESSMENT CRITERIA DISCUSSION

Processors and manufacturers must protect the integrity of the cannabis they process. Potential risks to the purity and integrity of the cannabis products must be assessed and standard operating procedures (SOP) should be written and followed with the goal of mitigating potential risks. An SOP designed to prevent contamination should be part of the Processor/Manufacturer System plan and are evaluated during the Initial Review prior to inspection. The inspector will verify that the SOP's described in the Processor/Manufacturer system plan are accurate, being implemented, and appear effective at minimizing risks.

CORE REQUIREMENT 10.2

MEASURES ARE IN PLACE TO PREVENT CO-MINGLING OF CERTIFIED PRODUCT AND INGREDIENTS WITH NON-CERTIFIED PRODUCTS AND INGREDIENTS.

ASSESSMENT CRITERIA DISCUSSION

The mixing of Sun+Earth Certified cannabis with non-certified Sun+Earth cannabis is prohibited. SOPs should be established to adequately track and label cannabis ingredients that have been approved for use in Sun+Earth Certified products. Records that will be reviewed to ensure this during the inspection can include receiving records, processing records, work-in-progress records, packing records, labeling records, storage records, inventory records, and sales records.

11 – INGREDIENTS AND PROCESSING AIDS

CORE REQUIREMENT 11.1

MULTI-INGREDIENT PRODUCTS MUST BE MADE FROM CERTIFIED CANNABIS AND ANY NON-CANNABIS INGREDIENTS MUST BE CERTIFIED ORGANIC OR ON ANNEX 2.

ASSESSMENT CRITERIA DISCUSSION

Processors handling single ingredient product (example: dried flowers) that has only been subjected to simple processing (such as cleaning, drying, curing, sorting, and packaging) may be labeled as Sun+Earth Certified if they maintain a valid Sun+Earth Certified certification or if they work with an existing Sun+Earth Certified farm to review, fill-out, and sign our Uncertified Processor Affidavit. This Affidavit process is intended to allow growers the flexibility to work with multiple processors to help them dry, cure, trim, sort, pack, and distribute product. This affidavit process requires that both grower and uncertified processor agree to several key practices to prevent accidental and intentional mixing or commingling of certified product with uncertified product. The affidavit also requires additional assurances that contamination risks are mitigated. We have created this special process with

Understanding the Sun+Earth Certified Standards

the understanding that movement of cannabis from the farm to processors and retailers is highly regulated and traced and documented with state required cannabis tracking systems. The rigor of documentation and traceback within the state legalized cannabis programs generally exceeds the recordkeeping requirements for other agricultural crops. This allows us to request traceability documentation from growers and uncertified processors covered under our affidavit program to review it and confirm that the integrity of the product has been maintained from field to retail package. The need for this uncertified affidavit program is less important in states like Oregon that allow farmers to package their own products and make direct relationships to retail outlets but is greater in states like California that require that licensed processors handle and distribute products. In the Sun+Earth Certified program we make a distinction between processors and manufacturers. Processors handle and pack cannabis flower products whereas manufacturers make value added products from cannabis like cannabis oils and edibles.

Manufacturers or Processors may label cannabis products as Sun+Earth Certified only if all cannabis ingredients have been verified as Sun+Earth Certified or USDA Certified Organic.

Multi-ingredient Sun+Earth Certified processed products must contain Sun+Earth Certified or USDA certified organic ingredients and may be labeled as “Sun+Earth Certified”. Any non-certified ingredient that could be allowed is generally considered a processing aid and must be listed as allowed and used per any restriction noted in the Sun+Earth Certified Annex 2 list of allowed processing aids.

The allowed processing aids are limited and less than those allowed by USDA Organic rules. Currently, Sun+Earth Certified only allows solventless extraction or extraction with CO₂ or USDA Certified Organic alcohol.

Manufacturers must obtain Sun+Earth Certified certification to be able to use the Sun+Earth Certified logo on their products. However, for manufacturers that source material from Sun+Earth Certified farms but don’t have formulations that are eligible for Sun+Earth Certified certification, they can work with a Sun+Earth Certified farm to review, fill out, and sign our Uncertified Manufacturer Affidavit. Manufacturers participating in this program may not use the Sun+Earth Certified logo and may only use the phrase “Made with Sun+Earth Certified Flower” in the ingredient panel of their product.

12 — PROCESSING METHODS

CORE REQUIREMENT 12.1

ALLOWED SOLVENTS FOR CANNABIS EXTRACTION ARE LISTED ON ANNEX 2.

ASSESSMENT CRITERIA DISCUSSION

Currently the only solvents allowed are CO₂, certified organic alcohol, and water. There is nothing in the standard that prohibits solventless extraction.

CORE REQUIREMENT 12.2

ANY PRODUCT LABELED AS CERTIFIED CANNOT CONTAIN ANY INGREDIENT FROM A GENETICALLY MODIFIED ORGANISM OR ANY INGREDIENT THAT WAS IRRADIATED.

ASSESSMENT CRITERIA DISCUSSION

The standard is designed to require certified Sun+Earth Cannabis, and certified organic ingredients in product labels as Sun+Earth. Standard 12.2. Manufacturers/Processors must submit documentation that proves any processing aid they use is listed on Annex 2 and is not genetically modified, not irradiated, not grown with sewage sludge, and not from nanotechnology. A copy of the organic certificate for any USDA organic ingredient in the formulation and specification sheets for any processing aids must be submitted with the Processing/Manufacturer application and the formulation must be approved by Sun+Earth prior to labeling a product as Sun+Earth.

13 – PACKAGING AND CONTAINERS

CORE REQUIREMENT 13.1

STORAGE AND PACKAGING MATERIALS DO NOT CONTAMINATE THE PRODUCT.

ASSESSMENT CRITERIA DISCUSSION

Specification sheets for packaging should be collected and reviewed to ensure it is not impregnated with nanotechnology or fungicides, etc.

CORE REQUIREMENT 13.2

BIODEGRADABLE, COMPOSTABLE, REUSABLE, AND RECYCLABLE PACKAGING MATERIALS SHOULD BE USED WHENEVER POSSIBLE.

ASSESSMENT CRITERIA

This will be discussed at inspection and inspector should report on the type of packaging used. Photos of packaging should be taken and attached to inspection reports so that Sun+Earth Certified final reviewers can assess the degree to which effort is made to comply with this standard. During Initial Review, Sun+Earth will call attempt to ensure adequate information about packaging is provided in the System Plan.

14 – CLEANING, DISINFECTING, AND SANITIZING PROCESSING FACILITIES

CORE REQUIREMENT 14.1

FACILITY SANITATION PRACTICES MUST NOT CONTAMINATE INGREDIENTS OR PRODUCTS.

ASSESSMENT CRITERIA DISCUSSION

Each processor and manufacturer must maintain the integrity of Sun+Earth products and any ingredients used to make them. This means preventing contamination and comingling. Critical control points will be identified within each process that could represent potential risk for contamination and comingling. A product flow chart should be developed for each process and used to help identify the critical control points. A standard sanitation operating procedure (SSOP) must be developed by the processor or manufacturer. The SSOP should be part of the Sun+Earth operation system plan and will be reviewed during Initial Review of an application of a new client and evaluated

for its ability to adequately clean equipment and cannabis contact surfaces. The SSOP and implementation will be evaluated during the onsite visit. Recordkeeping of sanitation events should be recorded and records should be available for review during the inspection as confirmation that the SSOP was followed.

CORE REQUIREMENT 14.2

ALLOWED SANITIZERS AND DISINFECTANTS ARE LISTED ON ANNEX 2.

ASSESSMENT CRITERIA DISCUSSION

These include hydrogen peroxide, peracetic acid, and alcohol. Please note that chlorine products are not included as allowed sanitizers on Annex 2. These are widely used in food processing facilities and if an applicant for Sun+Earth Certified is using them as sanitizers, we will ask them to switch to a sanitizer that is listed on Annex 2. Please also note, no quaternary ammonia products are allowed. These products are also common but are designed to leave a residue on contact surfaces that could contaminate products thus this material is not allowed.

15 FACILITY PEST AND DISEASE CONTROL

CORE REQUIREMENT 15.1

IN PROCESSING FACILITIES, PREVENTION AND EXCLUSION PRACTICES MUST BE USED, IF THESE PRACTICES ARE INEFFECTIVE THEN MECHANICAL TRAPS MAY BE USED AND AS A LAST RESORT, FACILITY PEST CONTROL MATERIALS LISTED ON ANNEX 2 MAY BE USED.

ASSESSMENT CRITERIA DISCUSSION

Prevention and exclusion practices can be assessed during onsite inspection of the facility. The facility should have adequate infrastructure to prevent rodents and other pests from access to the interior of the building. This means doors and windows that can close, no broken windows that could allow birds, bats, or insects entry. Pest refugia along the outside of the building should be minimized. Exclusion means keeping pests out of the facility. Prevention practices can also include removal of pest refugia within the building. Ingredients should be properly stored in sealed containers to prevent access to pest. Currently, there are no facility pest control materials listed on Annex 2. The Sun+Earth standards will evolve over time and Annex 2 will require review and additional tools for pest control for processors/manufacturers may need to be added.

16 – WORKER RIGHTS

CORE REQUIREMENT 16.1

REGENERATIVE OPERATIONS MUST HAVE A DOCUMENTED POLICY REGARDING WORKER RIGHTS. THIS POLICY MUST APPLY TO ALL WORKERS.

ASSESSMENT CRITERIA

In order to encourage a safe working environment a written worker policy is required. We are asking farms to create employee manuals that describe company policies for workers. This is an important document that can help operations communicate what their expectations of workers are and what workers can expect. The language in the standard "a documented policy regarding workers..." is vague on purpose to allow each operation flexibility in how worker policies are written and communicated. If a written policy regarding worker rights is not yet developed, an applicant will be asked to create one. It will be evaluated during the Initial Review and verified to be available for review by workers during the onsite inspection.

CORE REQUIREMENT 16.2

REGENERATIVE OPERATIONS MUST FOLLOW ALL APPLICABLE LABOR LAWS.

ASSESSMENT CRITERIA DISCUSSION

The US Department of Labor website has links to state labor laws. This is an excerpt from their website. "Every state has laws specifically dealing with child labor issues. When federal and state standards are different, the rules that provide the most protection to youth workers will apply. Employers must comply with both federal law and applicable state laws. Federal child labor rules are established by the [Fair Labor Standards Act \(FLSA\)](#) FLSA rules affect full- and part-time workers in the private sector and in the federal, state, and local governments. The rules vary depending on the age of the youth worker and his or her occupation. The FLSA "covers" or applies to all employees of certain enterprises. All employees of an enterprise, as defined by the FLSA, are covered regardless of the duties they perform. An important factor in determining coverage is interstate commerce, the generation of income over state lines by various means. If an employer engages in interstate commerce of any kind, its employees are covered by the FLSA and child labor laws in its state. If an employee is not an employee of one of these

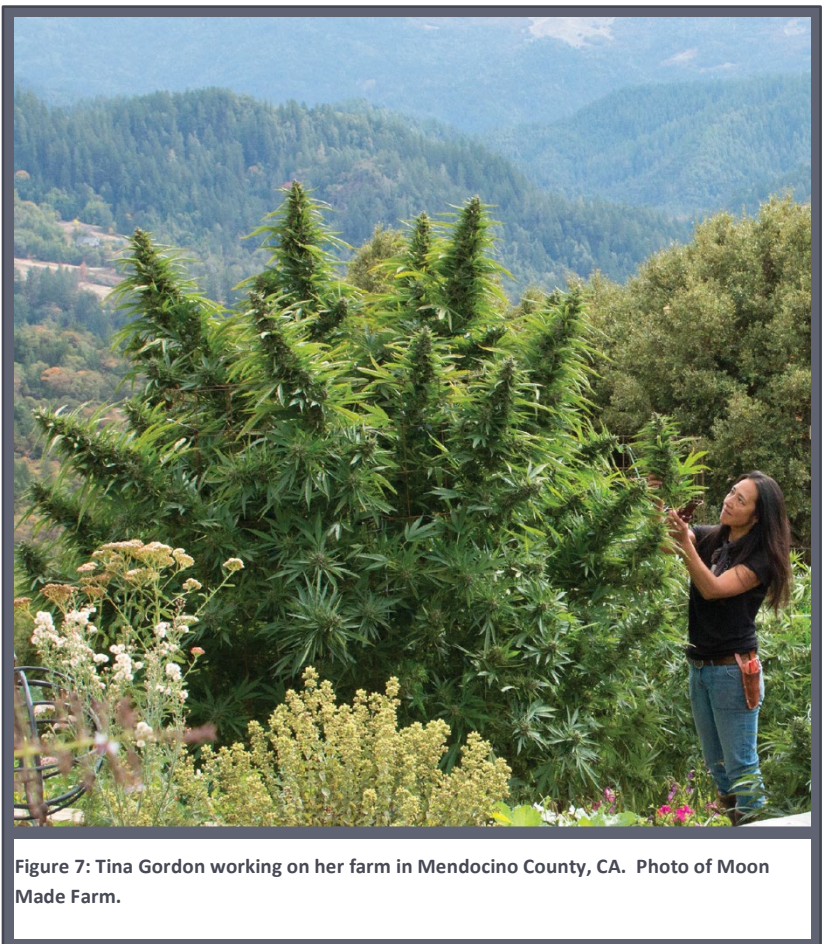


Figure 7: Tina Gordon working on her farm in Mendocino County, CA. Photo of Moon Made Farm.

enterprises, he or she may still be covered if the employee's own duties meet certain interstate commerce requirements. In addition, if a business generates income of \$500,000 per year, it is subject to federal labor laws.”

CORE REQUIREMENT 16.3

ALL WORKERS HAVE THE RIGHT TO SAFE AND HEALTHY WORKING CONDITIONS. IF EMPLOYEES ARE PROVIDED WITH WORKER HOUSING, IT MUST BE SAFE, SANITARY, AND ADEQUATE. WORKERS MUST BE PROPERLY TRAINED.

ASSESSMENT CRITERIA DISCUSSION

Workers that are not properly trained are at greater risk of injury. Each Sun+Earth operation should have an employee training manual and training sessions. Worker trainings should be documented in recordkeeping as confirmation that trainings occurred. Sun+Earth applicants that have not yet developed worker trainings and training manuals will be asked to create them. If employee housing is made available, it will be reviewed and assessed during the onsite inspection. The inspector should make general observations of employee housing and take photos for review by Sun+Earth during final review.

To assess whether housing is adequate, Sun+Earth Certified inspectors and reviewers will use a resource developed by the United Nations called "The Right to Adequate Housing Toolkit". More information about adequate housing can be found here,

<https://www.ohchr.org/EN/Issues/Housing/toolkit/Pages/RighttoAdequateHousingToolkit.aspx>.

The basic elements for adequate housing outlined in the above referenced toolkit and looked for and discussed at inspection include the following:

- Legal security of tenure: Regardless of the type of tenure, all persons should possess a degree of security of tenure which guarantees legal protection against forced eviction, harassment and other threats;
- Affordability: Personal or household financial costs associated with housing should not threaten or compromise the attainment and satisfaction of other basic needs (for example, food, education, access to health care);
- Habitability: Adequate housing should provide for elements such as adequate space, protection from cold, damp, heat, rain, wind or other threats to health, structural hazards, and disease vectors;
- Availability of services, materials, facilities and infrastructure: Housing is not adequate if its occupants do not have safe drinking water, adequate sanitation, energy for cooking, heating and lighting, sanitation and washing facilities, means of food storage, refuse disposal, etc.;
- Accessibility: Housing is not adequate if the specific needs of disadvantaged and marginalized groups are not taken into account (such as the poor, people facing discrimination; persons with disabilities, victims of natural disasters);
- Location: Adequate housing must allow access to employment options, health-care services, schools, child-care centers and other social facilities and should not be built on polluted sites nor in immediate proximity to pollution sources;
- Cultural adequacy: Adequate housing should respect and take into account the expression of cultural identity and ways of life.

CORE REQUIREMENT 16.4

ALL WORKERS HAVE THE RIGHT TO JUST TREATMENT THAT PROMOTES DIGNITY AND RESPECT.

ASSESSMENT CRITERIA DISCUSSION

Promoting fairness, dignity, and respect within the workplace can be a difficult task. However, it is of supreme value for all involved. Regenerative farms, processors, and manufacturers can help support these values by leading by example and create a culture of positivity and employee engagement. Showing gratitude for work is a basic and easy way for employers to honor their workers. This is an aspirational standard that is a first step towards establishing within the workplace what

Carol Sanford describes in her book [The Regenerative Business](#) as employee self-determination and personal agency. Sun+Earth Certified inspectors can attempt to discuss these values by asking certified business what they do to promote dignity and respect within the workplace.



Figure 8: Casey O'Neill working on his farm in Mendocino County, CA. Photo of HappyDay Farms.

CORE REQUIREMENT 16.5

ALL WORKERS AND JOB APPLICANTS ARE TREATED EQUALLY WITHOUT REGARD TO THE PERSON'S RACE, COLOR, GENDER, GENDER IDENTITY, PREGNANCY, SEXUAL ORIENTATION, HIV/AIDS STATUS, DISABILITY, MARITAL STATUS, AGE, RELIGION, POLITICAL OPINION, NATIONALITY, CLASS, OR OTHER PERSONAL CHARACTERISTICS.

ASSESSMENT CRITERIA DISCUSSION

Certified operations can comply with this standard by attending trainings and offering training for workers that focus federal and state laws regarding discrimination in the workplace. Inspectors should ask if trainings have been attended and offered.

CORE REQUIREMENT 16.6

HARASSMENT (VERBAL, PHYSICAL, SEXUAL, EMOTIONAL, AND ANY OTHER FORM) BASED ON ANY OF THE ABOVE CHARACTERISTICS IS PROHIBITED.

ASSESSMENT CRITERIA DISCUSSION

Certified operations can comply with this standard by attending trainings and offering training for workers that focus federal and state laws regarding harassment in the workplace. Inspectors should ask if trainings have been attended and offered.

CORE REQUIREMENT 16.7

ALL WORKERS ARE ENTITLED TO FAIR COMPENSATION THAT SUPPORTS A FULFILLING LIFESTYLE.

ASSESSMENT CRITERIA DISCUSSION

What constitutes fair compensation and a fulfilling lifestyle is subjective and difficult to quantify. There was much discussion around this topic during our Technical Advisory meetings. No one set of criteria was agreed upon. In order to assess what level of monetary compensation might be considered adequate, Sun+Earth Certified will refer to the MIT Living Wage Calculator (<http://livingwage.mit.edu/>) as a guide and reference for discussing this part of the Sun+Earth standard with applicants and certified operations. Many small-scale family farms offer alternative forms of compensation to their employees such as housing, and garden vegetables. These types of alternative forms of compensation should also be noted during the inspection. If possible, farm workers should be interviewed during the onsite inspection and the Sun+Earth standards on worker rights should be discussed.

CORE REQUIREMENT 16.8

ALL WORKERS HAVE THE RIGHT TO A WORK ENVIRONMENT THAT FOSTERS HAPPINESS AND MUTUAL APPRECIATION.

ASSESSMENT CRITERIA DISCUSSION

This is an aspirational value statement that is highly subjective to the individual. We will begin to assess this during onsite interviews of farmers and workers. This requirement is related to Core Requirement 16.4. Similarly, this requirement is about empowering workers and providing a workplace that supports the evolution of human consciousness while employees and businesses flourish.

CORE REQUIREMENT 16.9

PRODUCTS ARE NEVER PRODUCED IN A MANNER THAT VIOLATES HUMAN RIGHTS: SUCH AS FORCED OR INVOLUNTARY LABOR, OR ILLEGAL CHILD LABOR.

ASSESSMENT CRITERIA DISCUSSION

According to The International Labor Organization (ILO) www.ilo.org forced or compulsory labor is defined as, “all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily. In a recent ILO report entitled “Eliminating Forced Labour: Handbook for Parliamentarians No. 30” (https://www.ilo.org/global/topics/forced-labour/publications/WCMS_723507/lang-en/index.htm) , eleven indicators of forced labor are identified, including:

- abuse of vulnerability;
- deception;

- restriction of movement
- isolation;
- physical and sexual violence;
- intimidation and threats;
- retention of identity documents;
- withholding of wages;
- debt bondage;
- abusive working and living conditions; and
- excessive overtime.

Sun+Earth Certified inspectors should review this document and familiarize themselves with the definitions of each indicator. The organization Verité published a document entitled Assessment of Forced Labor Risk in the Cocoa Sector of Côte d'Ivoire (<https://www.verite.org/wp-content/uploads/2019/02/Verite-Report-Forced-Labor-in-Cocoa-in-CDI.pdf>) which includes a table with indicators for recognizing involuntariness and forced penalties on pages 16-21. Forced labor isn't a major problem in the legal cannabis sector in the United States. However, this core requirement is still important to include and assess while on inspection of farms and business. Some of the farms that apply for certification are in isolated communities and are not immune to some of the practices listed above. The inspector should include a detailed description of situations where any of the above indicators appear to be present.

CORE REQUIREMENT 16.10

PRODUCTS ARE TO BE PRODUCED IN A MANNER THAT RESPECTS INDIGENOUS PEOPLE AND THEIR LAND RIGHTS.

ASSESSMENT CRITERIA DISCUSSION

We won't certify any farms or businesses located on reservations of federally recognized tribes without the consent of tribal authorities. During the Initial Review process of an applicant's System Plan, we can determine the location of the proposed farm or manufacturer and ensure that this core requirement is upheld. No inspection of businesses located on tribal land will occur without prior written consent of the tribal authorities. Inspectors will not be assigned inspections of farms or facilities that don't meet core requirement 16.10.

17 – CONTRACT AND NEGOTIATION

CORE REQUIREMENT 17.1

ALL WORK IS GOVERNED BY WRITTEN CONTRACTS THAT ARE FAIR, EQUITABLE, TRANSPARENT AND CREATED THROUGH GOOD FAITH NEGOTIATIONS.

ASSESSMENT CRITERIA DISCUSSION

Labor contracts should at a minimum include each provision identified in section 16.0 of the Sun+Earth Standard. If written contracts have not been developed, Sun+Earth applicants will be asked to create them. Worker contracts should be on hand and available for review during the inspection. Contracts should include a signature for each worker that verifies they have read and agreed to the work contract.

CORE REQUIREMENT 17.2

ALL CONTRACTS SHALL INCLUDE A DOCUMENTED CONFLICT RESOLUTION PROCEDURE THAT IS FREELY AVAILABLE AND INCLUDES A COMPLAINT AND APPEALS PROCESS.

ASSESSMENT CRITERIA DISCUSSION

Sun+Earth will evaluate contracts to ensure they include a process for conflict resolution and that operations provide a mechanism for workers to file complaints and for appealing management decisions.

CORE REQUIREMENT 17.3

ALL FARMERS AND/OR WORKERS ARE FREE TO ASSOCIATE AND BARGAIN COLLECTIVELY AND CAN CHOOSE REPRESENTATIVES IN A PROCESS FREE OF INTERFERENCE AND/OR INTIMIDATION.

ASSESSMENT CRITERIA DISCUSSION

The employee handbook or worker contract for each certified business should somehow address core requirement 17.3 by explicitly stating that no barriers to collective bargaining will be implemented. During Initial Review and Final Review of each request for certification, the subject of contract and negotiation will be addressed and during the first year of certification we will allow certified entities to develop written contracts and worker policies in more detail since most cannabis farms haven't ever been required to develop them.

18 – COMMUNITY ENGAGEMENT

CORE REQUIREMENT 18.1

OPERATIONS MUST HAVE A WRITTEN DESCRIPTION REGARDING COMMUNITY ENGAGEMENT.

ASSESSMENT CRITERIA DISCUSSION



Figure 9: Photo courtesy of Sunbright Gardens in Mendocino County, CA.

The point here is to encourage Sun+Earth Certified operations to think critically about their role within the community and map out how the operation will engage and develop good relationships within the community. If a written description of is not available for review during the onsite inspection, the operation will be asked to create one. Examples of community engagement include: participating in farmer's market, Community Supported Agriculture, volunteer fire department activities, river clean-up, local government, charity events, etc. Requiring a written document means the certified operation must understand and assessment community needs and create a positive intention and vision to uplift their neighbors. This core requirement is a unique characteristic of the Sun+Earth Certified standards, not found in most other 3rd party certification programs.

CORE REQUIREMENT 18.2

FARMS SHALL IMPROVE AND ENGAGE WITH THE LOCAL COMMUNITY.

ASSESSMENT CRITERIA DISCUSSION

This core requirement means we attempt to verify the written description discussed above. During onsite inspection, the inspector will discuss how the farm was able to engage and improve their community. The inspector should describe in the inspection report how the farm is actively engaging with the larger community.

CORE REQUIREMENT 18.3

CERTIFIED FARMS MUST ENGAGE IN A FARMING KNOWLEDGE SHARING ACTIVITY ANNUALLY.

ASSESSMENT CRITERIA DISCUSSION

This can be accomplished in a variety of ways including through on farm workshops about regenerative farming, farm tours, community presentations about the farm and farming methods, development of garden guides that talk about regenerative farming practices, etc. This should be discussed at inspection.

19 – LABELING

CORE REQUIREMENT 19.1

ALL INGREDIENTS MUST BE ACCURATELY LISTED ON THE LABEL AND CERTIFIED REGENERATIVE AND/OR CERTIFIED ORGANIC INGREDIENTS MUST BE IDENTIFIED.

ASSESSMENT CRITERIA DISCUSSION

Labels should be included as part of the Sun+Earth System Plan and reviewed during the initial review and final review of the certification request. For certified operations adding new products mid-season, new labels should be sent to Sun+Earth for review and approval if they include the Sun+Earth logo. During the inspection, labels should be requested for review to confirm they are on file and approved by Sun+Earth Certified. For single ingredient products like dried flower, it is not necessary to have an ingredient panel as long as labels clearly communicate what the product is. For multiple ingredient products like edibles, there should be an ingredient panel that lists product ingredients. The inspector should check the label against the product formulation that is in the System Plan for all multi-ingredient products that use the Sun+Earth Certified Logo.



CORE REQUIREMENT 19.2

LABELS MUST INCLUDE THE NAME OF THE CERTIFIED ENTITY.

ASSESSMENT CRITERIA DISCUSSION

This means that the Sun+Earth Certified farm or processor/manufacturer is included on labels. This helps consumers know where the product originated and allows us to track the product in the case of consumer feedback about it.

ANNEX 1 – ALLOWED CROP INPUTS

Allowed Material	Restriction
<p>Animal by-products</p> <p>Examples include: Blood meal, bone meal, crab meal, hoof and horn meal, feather meal, fish meal, fish waste, oyster shell meal, protein meal.</p>	No restriction.
Animal manure	No restriction.
Beneficial insects.	No wild harvested ladybugs.
Biodynamic preparations	No restriction.
Biopesticides	Only if the product brand name is approved for use in certified organic farming.
Cardboard, paper	Non-waxed, non-fumigant treated.
Compost – Animal manure based	No restriction.
Compost – Plant matter based	No restriction.
Elemental sulfur	Non-synthetic sources. Only if the product brand name is approved for use in certified organic farming.

Essential oils	For pest control as a last resort only. Only if the product brand name is approved for use in certified organic farming.
Fermented plant matter	No restrictions.
Guano	Seabird guano only; no bat guano.
Horticultural oil	For pest control as a last resort only. Only if the product brand name is approved for use in certified organic farming.
Microorganisms	Must not be genetically modified.
Mined substances of low solubility Examples include: Basalt, bentonite, biotite, calcium carbonate (limestone), calcium sulfate (gypsum), chalk, charl, dolomite lime, feldspar, granite powder, greensand, kieserite, langbeinite, leonardite, magnesium carbonate, magnesium chloride, magnesium rock, magnesium sulfate (Epsom salts), marl, mica, potassium sulfate, pulverized rock, pumice, rock dust, sand, sodium bicarbonate, stone meal, sulfate of potash magnesia, vermiculite, zeolite.	Only allowed if needed based on soil or plant tissue testing. Only if the product brand name is approved for use in certified organic farming.
Neem	For pest control as a last resort only. Only if the product brand name is approved for use in certified organic farming.
Organic Molasses	No restriction.
Oilseed, oilseed meal	No restriction.
Peat	For potting mixes only. No synthetic additives.

Plant matter, crop residue, mulch	Must not be from GMO crops.
Potassium bicarbonate	For pest control as a last resort only. Only if the product brand name is approved for use in certified organic farming.
Seaweed	No restriction.
Seawater or evaporated seawater	No restriction.
Soap	No restriction.
Sticky traps/barriers	No restriction.
Sugar	Non-GMO.
Sulfur	For pest control as a last resort only. Only if the product brand name is approved for use in certified organic farming.
Vermicompost, vermicompost tea, worm castings	No restriction.
Vinegar	Non-synthetic.
Wood, wood ash, wood charcoal, wood shavings	From untreated wood sources only.

ANNEX 2

Allowed Material	Restriction
Organic Alcohol	For use as a sanitizer or as a solvent or winterization of oils.

Baking powder	No restriction.
Baking soda	No restriction.
Carbon Dioxide	For use as a solvent during extraction.
Citric acid	No restriction.
Hydrogen peroxide	For use as a sanitizer.
Microorganisms	Non-GMO.
Nitrogen	No restriction.
Paper	For rolled joints.
Peracetic acid	For use as a sanitizer.
Salt	No additives or anti-caking agents.
Yeast	Non-GMO.

ANNEX 3 SEED/CLONE ACQUISITION HIERARCHY

Best Option	Seeds are saved on farm and used in the next cultivation cycle. Farm participates in a Sun + Earth Seed Circle to diversify genetics.
	Seeds are acquired from Sun + Earth Certified source.
	Clones are acquired from a local, Sun + Earth Certified source.
	Clones are acquired from a Sun + Earth Certified source.
	Seeds are acquired from a certified organic source.
	Clones are acquired from a local, certified organic source
	Clones are acquired from a certified organic source
	Seeds are acquired.
	Clones are acquired from a local source. Leaf tissue testing for pesticide residue is encouraged.
Worst Option	Clones are acquired. Leaf tissue testing for pesticide residue is encouraged.

