inputs and instead focuses on enhancing the health of the land and ecosystems, it has less of an impact on the climate.[xxvii]

Often building on the foundational standards of organic but many times lacking verification or a consistent definition, regenerative agriculture takes a more holistic approach to crop cultivation and land management by treating farms as integrated systems that exist as part of the broader ecosystem.[xxviii,xxix] Through this approach, regenerative farmers grow food by prioritizing biodiversity, soil health, and eliminating the reliance on synthetic inputs, thus nurturing the ecological systems and nutrient cycles necessary for plants to flourish.[xxx,xxxi]

Especially as climate change continues to worsen, the need for climate-smart agriculture and more resilient regional food systems is becoming increasingly critical. Organic or verified regenerative practices both offer alternative frameworks to conventional agriculture that accomplish these goals.[xxxii,xxxiii,xxxiv]

As technology has advanced over the decades, in congruence with growing concerns over climate change, food security, and population growth, it has naturally found applications within the agricultural industry to develop more sophisticated and versatile hydroponic and similar soilless growing systems.[xxxv,xxxvi] Advocates point to many potential benefits they could offer, such as high yields, water efficiency, fewer pesticides, year-round production, the ability to grow food close to or in dense urban centers, and the small physical footprint of operations that employ vertical production to reduce land use (conversion of forests to farmland contributes to climate change).[xxxvii,xxxviii]

Hydroponic systems also have a number of drawbacks, including increased risk of waterborne diseases, reliance on synthetic or highly concentrated fertilizers, and large energy requirements for lighting, heating, and cooling.[xxxix,xl] Depending on the crop and the climate of facility's location, the energy needs for lighting and heating/cooling loads could be considerably greater than traditional farming and reliance on electricity to control the growing environment leaves indoor operations vulnerable to power outages.[xli,xlii] Additionally, the infrastructure, equipment, and technology required to build and maintain indoor farms could have environmental impacts (e.g., materials used in electronics) and if farms rely on electricity generated by coal or natural gas, there are associated climate impacts to consider..[xliii,xliv] Lastly, there is a strong case that soil is critical to growing healthy, productive plants because of the interplay between root structures, nutrient cycling, and microorganisms in the soil.[xlv] Some hydroponic operations have obtained USDA organic certification, which has led to significant controversy around the role of soilless growing methods in organic given the emphasis organic has historically placed on fostering healthy, biodiverse, and carbon-sequestering soil.[xlvi,xlvii]

PCC supports organic and regenerative agriculture due to the reasons outlined above. Our standard places a priority on local, in-season produce, balanced with staples offered year-round from reputable organic and non-GMO producers. Since hydroponically grown produce is already in the market, and can be certified organic, we encourage producers to be transparent about their production methods, so that we can label hydroponics on the shelf to provide customers with knowledge about how their food is grown.

Scope

This standard applies to all fresh produce items sold at PCC, including pre-packaged items, bulk produce, and pre-cut offerings.

Bioponics is an umbrella term to describe soilless growing systems where plant roots are suspended in or exposed to nutrient-rich plant-derived water solutions. They can also be grown in combination with fish, where the waste from fish is converted into plant-available nutrients through microbes in the system. Bioponics do not use synthetic fertilizers and rely more upon recirculating nutrient cycles than typical hydroponic operations.

Container-grown refers to a growing system that isolates plants and their root systems from the broader ecosystem and soil using growing vessels like pots, troughs, trays, or plastic bags. Plants are often grown in greenhouses to provide additional control over the growing environment and inputs.

Genetically Engineered (GE)/Genetically Modified Organism (GMO) does not have a standardized definition. (In part, this has created some of the problems for achieving GE transparency and reaching consensus on how best to identify and communicate this with consumers.) Many authorities, however, would define GE food or GMOs as a living organism whose genetic material (otherwise known as DNA) has been artificially manipulated in a laboratory through genetic engineering. Genetic engineering creates combinations of plant, animal, bacteria, and virus genes that do not occur in nature or through traditional crossbreeding methods.

High-Risk Genetically Engineered Crop Ingredients are identified on the Non-GMO Project list of crops and inputs that are highly likely to be GE. These include, but are not limited to, canola, corn (except popcorn), papaya, soy, and sugar beet.

Hydroponics has multiple definitions, but most simply it can be understood as an agricultural production system that involves growing plants not in the ground but rather in a nutrient solution (or liquid feed) either with or without the use of a growing medium, like coco coir. The 2010 recommendation from the National Organic Standards Board has defined hydroponics in the following manner: "The production of normally terrestrial, vascular plants in nutrient rich solutions or in an inert, porous, solid matrix bathed in nutrient rich solutions."[xlviii] Hydroponic operations can range from small, in-home systems for herbs and leafy greens to large-scale commercial growing operations housed in large buildings or greenhouses. Hydroponics can also be built upwards for vertical farming.

National Organic Program (NOP) was established in 2000 under the Organic Foods Production Act of 1990 to regulate the production, processing, and sale of certified organic foods in the United States. The NOP resides within the USDA and manages organic certification standards, enforcement, and accreditation of independent certifying bodies. The National Organic Standards Board (NOSB), a federal advisory committee, provides recommendations and guidance to the NOP on developing new rules and regulations related to organic certification.

Non-GMO Project is a nonprofit organization that certifies products that are free of genetic engineering. Their standards require verification that no genetically modified materials were used in production of a product, rather than relying on testing the final product for traces of GE material. They also engage in education and advocacy efforts to engage consumers and protect the integrity of the non-GMO food supply chain.

Organic refers to the practices associated with organic food production and processing that prohibit the use of most synthetic inputs and pesticides, along with requiring other environmental and animal-friendly agricultural and food handling practices. Established by the Organic Foods Production Act (a federal law), the National Organic Program (NOP) within the US Department of Agriculture (USDA) manages the organic certification standards, enforcement, and accreditation of independent certifying bodies. Many other countries also have organic certification programs.

Pesticides are chemical substances used to kill, repel, or control pests, including insects, rodents, fungi, and unwanted plants, which interfere with cultivation of a crop or food product. The term includes herbicides that target plants, insecticides that target insects, rodenticides that target rodents, and fungicides for controlling mold or mildew growth.

Regenerative agriculture is a holistic land management and farming methodology that focuses on increasing and enhancing soil organic matter to improve nutrient content, water retention, and carbon sequestration. Unless certified by a third party with established regenerative standards, regenerative does not have an agreed upon definition or guarantee associated with the term's use.

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