Allowed and Prohibited Substances in Certified Organic Crop Production

The National Organic Program allows all naturally derived substances with a few exceptions, and prohibits all synthetic substances with a lot of exceptions. The rules on synthetic substances define how you can use a synthetic substance—for example, ammonium can be used to repel deer for pest control but it cannot be put on crops.

Below is a list of the natural substances that are prohibited and the synthetic substances that are allowed. Remember that you can use the OMRI database or look for the OMRI label on a product to see if you can use it on an organic farm. If it has the OMRI label it’s allowed.

Natural substances that are not allowed:

- Ash from manure burning
- Arsenic
- Calcium chloride is prohibited unless it is used as a foliar spray to treat a calcium uptake disorder in the crop
- Lead salts
- Potassium chloride, also called potash, is allowed only if it comes from a naturally mined source and is used in a way that minimizes buildup in the soil. Other types of potash are not allowed.
- Rotenone
- Tobacco dust, also known as nicotine sulfate

Synthetic substances that are allowed as disinfectants, sanitizers, irrigation cleaners, and algaecides:

- Alcohols including ethanol (drinking alcohol) and isopropanol (rubbing alcohol)
- Chlorine products
  - If you use a chlorine product like bleach to clean irrigation systems or equipment and the chlorine product comes in direct contact with the soil or the crop, the chlorine product concentration must be under 10 parts per million (ppm). You can measure this concentration with swimming pool monitoring tests.
  - Calcium hypochlorite, also called bleaching powder, chlorine powder, or chlorinated lime.
Chlorine dioxide
Hypochlorous acid made from electrolyzed water
Sodium hypochlorite, also known as Clorox or liquid bleach

- Copper sulfate (only allowed in rice production)
- Hydrogen peroxide
- Ozone gas (only allowed for cleaning irrigation systems)
- Paracetic acid, also known as Sanidate
- Soap-based algaecides and demossers
- Sodium carbonate peroxyhydrate-use is restricted by federal law, can be used for uses listed on label

**Synthetic substances that are allowed as herbicides and weed barriers**

- Soap based herbicides can be used only for farm maintenance, for example in roadways, ditches, and right of ways. They can also be used in ornamental crops
- Types of synthetic mulches allowed:
  - Newspaper or other paper, as long as it is not glossy or has colored inks (no magazines) can be used to suppress weeds or added as part of your composting system
  - Plastic mulch and covers, often colored black and called landscape cloth. This cloth cannot be made of PVC (note, most billboard signs are made from PVC). Plastic mulch must be removed at the end of the growing season and cannot be allowed to degrade into the soil.
  - Biodegradable bio-based mulch film, also known as BDMs. Cannot be produced with prohibited organisms or feedstock (for example, made from GMO plant material).
- Soaps can be used as animal repellants
- Ammonium can be used as a large animal repellant (ex. for deer) but it cannot come in contact with the soil or the edible part of the crop.

**Synthetic substances that are allowed as insecticides and pesticides:**

- Ammonium carbonate, also known as baker’s ammonia, can only be used as bait in insect traps and cannot have contact with crops or soil
- Aqueous potassium silicate can be used as long as the silicate is made from natural sand
- Boric acid can be used as long as it does not come in contact with food or crops
- Copper sulfate can only be used in rice production
- Elemental sulfur
- Lime sulfur
- Oils, including horticultural oils and summer oils
- Insecticidal soaps
- Sticky traps and barriers
- Sucrose octanoate esters (follow label for appropriate use)
- Pheromones for insect management
- Vitamin D3 as a rodenticide
- Ferric phosphate for snail or slug bait

**Synthetic substances that are allowed to control plant disease**

- Aqueous potassium silicate can be used as long as the silicate is made from natural sand
- Coppers such as copper hydroxide, copper sulfate, copper oxide, and copper oxychloride. Coppers can be used only in a way that minimizes buildup in the soil, and can never be used as herbicides.
- Hydrated lime, also called slaked lime. Quicklime is not allowed.
- Hydrogen peroxide
- Lime sulfur
- Oils, including horticultural oils and summer oils
- Paracetic acid can be used only for fire blight
- Potassium bicarbonate
- Elemental sulfur

**Synthetic substances that are allowed as plant and soil amendments**

- Non-hydrolyzed aquatic plant extracts
- Elemental sulfur
- Humic acids, but only naturally occurring deposits, water, and alkali extracts (read label)
- Lignin sulfonate can be used only as a chelating product and as a dust suppressant
- Magnesium sulfate can be used only if there is a documented soil deficiency
- Micronutrients can be used but not as a defoliant, herbicide, or desiccant. Micronutrients made from nitrates or chlorides are not allowed. Micronutrients can only be used if there is a documented soil or tissue test.
  - Types of micronutrients that are allowed include:
    - Soluble boron products
    - Sulfates
Carbonates
Oxides
Silicates of zinc, copper, iron, manganese, molybdenum, selenium, and cobalt

- Liquid fish and squid products like fish emulsion
- Vitamins B1, C, and E

Synthetic substances allowed for other miscellaneous uses:

- Hydrogen chloride is allowed for de-linting cotton seeds for planting
- Ethylene gas can be used for pineapple flowering
- Sodium silicate can be used postharvest as a floating agent for tree fruit and fiber processing
- Microcrystalline cheesewax can be used for growing mushroom logs as long as it is not made with synthetic colors or ethylene-propylene

Commonly used allowed substances:

- Fish emulsion
- Neem oil
- Soap
- BT (DiPel)
- Pyrethrin (Pyganic)
- Spinosads
- Parasitic nematodes
- Chromobacterium (Grandevo)
- Diatomaceous earth
- Traps and lures for coddling moths, peach tree borer, etc.
- Epsom salts
- Feather meal, blood meal, and bone meal
- Azomite (mix of potash and minerals)