

# organic matter

once-living organisms

decayed decaying

Carbon-based (organic compounds)

*inorganic matter: non-biological*

# organic matter in soil

water retention

nutrients

**soil structure:**

prevents compaction

improves porosity, plant rooting, organisms

# organic foods

**certified organic** (organic standards)

no synthetic pesticides

no chemical fertilizers

no irradiation

no solvents

no chemical food additives

# OMRI Listed

## **Organic Materials Review Institute**

[omri.org](http://omri.org)

Products that do not fall under organic certification  
(that is, no standards set for that product category)  
can instead be OMRI Listed.

OMRI Listed products can be used by certified organic operations  
without jeopardizing their organic certification.

**EM•1 is OMRI Listed.**

# microorganisms

**microbes**

**microscopic organisms**

archaea      bacteria

fungi      algae      protozoa

microscopic plants

microscopic animals

# pathogens

## **disease-causing**

by toxins or cell damage

bacterial [ $\sim 1\%$  of  $0.1\%$ ]

fungus [ $< 10\%$  of  $5\%$ ]

viral

parasitic

prionic (protein)

*infect plants, animals or microbes*

# fermentation

microbial action producing

**alcohol** wine beer cider

**CO<sub>2</sub>** leavening bread

**lactic acid** (sour), vinegar (pickling)

# results of fermentation

alcohol      preservation

(generally, anti-pathogenic    anti-rotting)

nutrients available & absorbable

(vitamins    amino acids    fatty acids)



# bokashi

Japanese term meaning  
**fermented organic matter**

# Effective Microorganisms

## EM

specific combination of microbes

**lactic acid bacteria** sauerkraut yogurt cheese

**yeast** baker's yeast brewer's yeast

**phototrophic bacteria** natural detoxifier  
found in soil, water, worm castings, etc.

# EM fermentation

(EM => improve soil microbes)

to ferment organic matter  
solids & liquids  
more easily and consistently

# EM Bokashi

organic matter  
fermented  
with EM

# Activated EM

activation of EM  
with molasses  
in water 20 folds

# Other EM fermented recipes

fermented food waste FFW

EM-5 foliar feed

EM fermented plant extracts FPE

EM fermented drinks

EM fermented foods

# results of EM fermentation

magnified by combination in EM

**antioxidants**      **organic acids**      **enzymes**

naturally preserves      anti-pathogens      anti-rotting

anti-rusting      anti-corrosion

break down: materials, chemicals, toxins, pollutants (bioremediation)

**more nutrients** available & absorbable

vitamins      minerals      amino acids (proteins)

# in sync with nature

eats our waste

poops out essentials for life

low tech low cost low maintenance

aligned with beneficial organisms

microbes are everywhere



# EM•1 Microbial Inoculant

OMRI Listed

U.S. version made in Tucson, AZ

by EMRO USA

EM Research Organization (EMRO)

Exact species in EM•1 publicly open

# How economical?

**1 quart EM•1      \$23 – \$35**

500 lbs EM Bokashi => 16,000 lbs FFW

50 lbs (1/3 FFW + 2/3 soil) => fertilize 1,000 sq. ft.

16,000 lbs FFW => 960,000 sq. ft. (22 acres)

*or* 22 qts Activated EM => 700 gal. water plants

*or* 24 qts EM•5 => 3,000 gal. spray soil/plants

*or* 100 qts FPE => 12,500 gal. spray plants  
and 200 lbs fermented plant material (nutrient-rich organic matter)

*or* 22–26 qts of fermented drink => 100 qts seltzer mix