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The Good Neighbor Compost Handling Project

Robert Masson

Assistant Ag Extension Agent
Yuma County
Cooperative Extension
Masson@arizona.email.edu

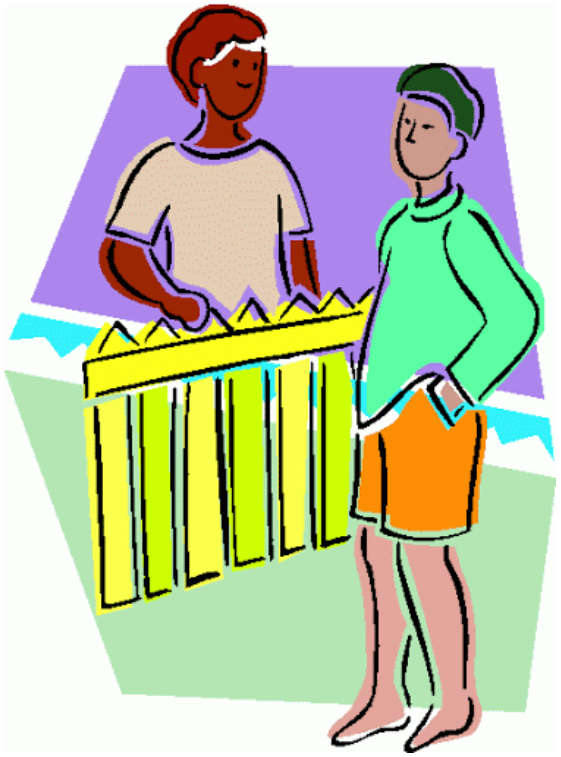
Ana Castellon

University of Arizona
Undergraduate Student

THE UNIVERSITY OF ARIZONA
Cooperative Extension

www.agric.wa.gov.au/soil-carbon

Being a good neighbor on the farm



Compost is organic matter

turfgator.com/organic-matter

BROKEN DOWN PLANT OR ANIMALS THAT ARE RETURNED TO THE EARTH

GREAT NUTRIENT SOURCE

BUILDS HEALTHY SOIL

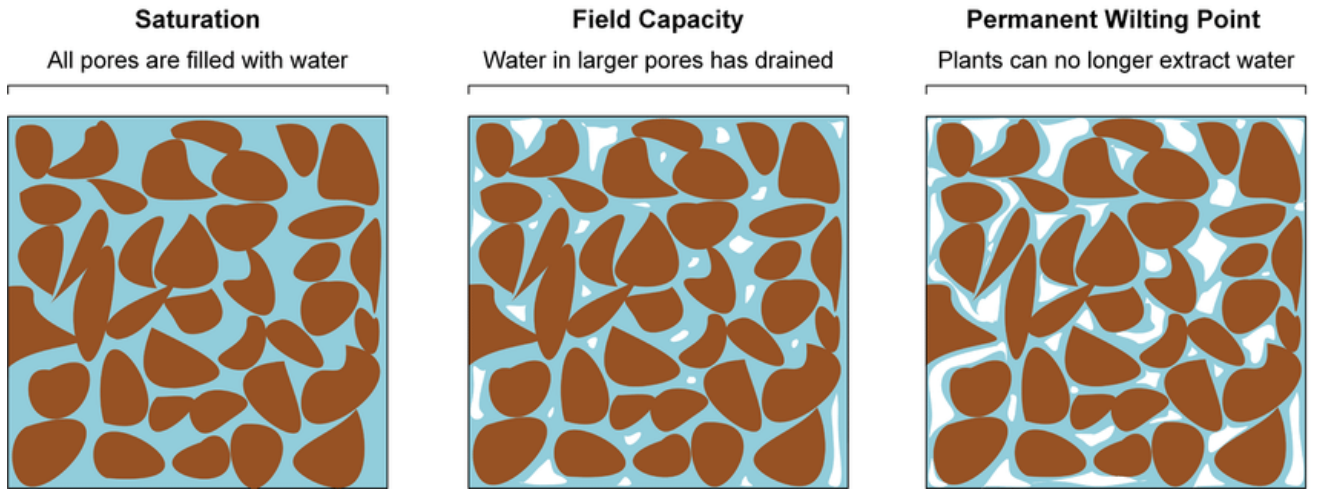
HOST TO BENEFICIAL MICROBES

MAKES SOIL EASIER TO WORK (FRIABLE)

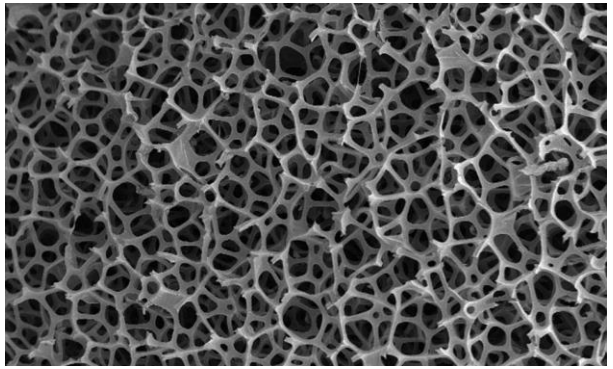
ORGANIC MATTER SHOULD BE MONITORED AND RESTORED WHEN LOW

SOM increases water infiltration and storage

- Roots need air and water
- Optimal growth at ‘field capacity’
  - Small pores filled with water
  - Large pores filled with air



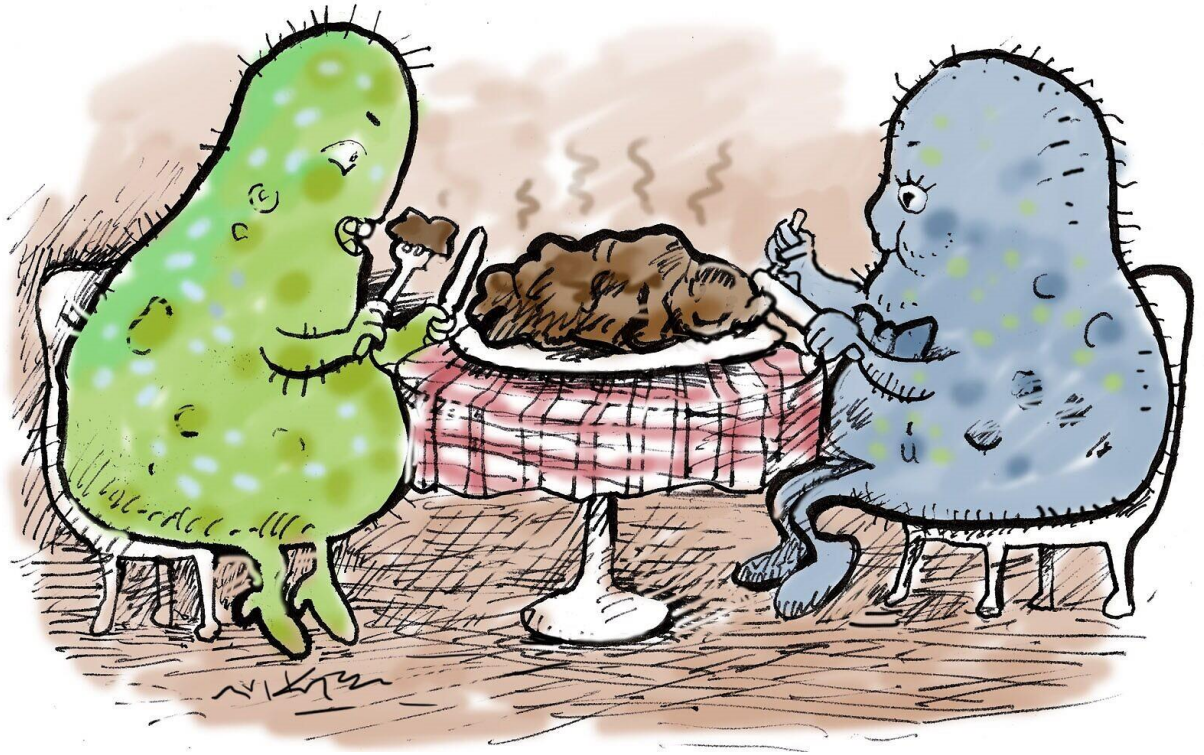
- Organic matter lengthens ‘field capacity’ time
  - Shaped like a sponge
  - Holds air and water
  - SOM can hold 20X its weight in water
  - Every 1% increase in SOM raises water holding capacity 3.7%



https://www.researchgate.net/publication/317501722_Understanding_Soil_Water_Content_and_Thresholds_For_Irrigation_Management/figures?lo=1

Organic matter is food

- Soil ecosystem that starts with organic matter
  - Energy for growth
  - Carbon to build new cells
- SOM is made of living and dead organisr
- Healthy soil requires life
  - Fertilizer conversion and uptake
  - Plant disease prevention
  - Glomalin: glue that holds soil together



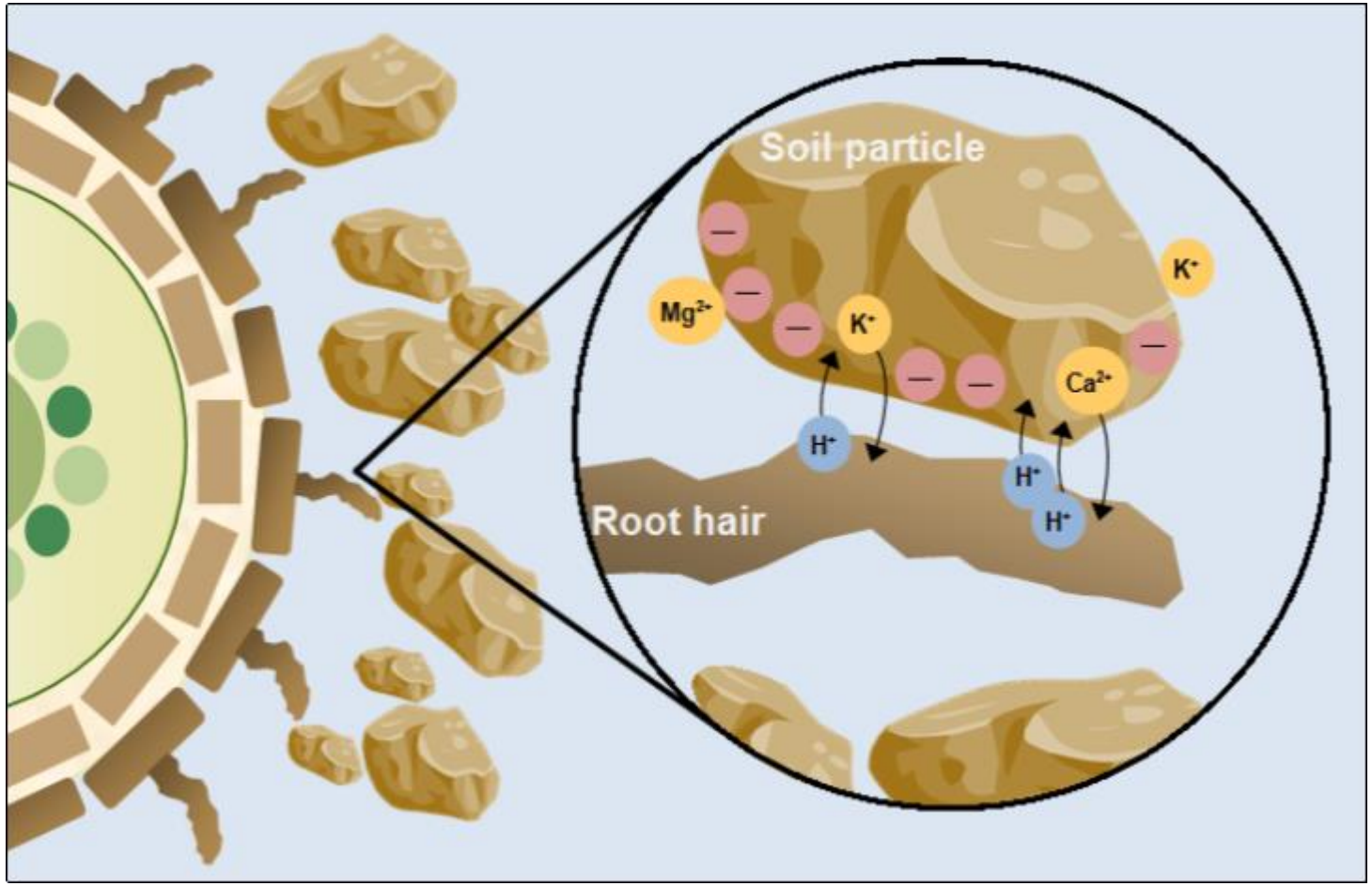
https://www.timesofisrael.com/groundbreaking-israeli-microbe-research-scoops-up-e4-million-in-grants/

Plant Productivity and Fertilizer Efficacy

- Organic matter increases nutrient availability to plants and reduces fertilizer leaching loss

- Adding SOM often increase the cation exchange (CEC)

- High organic matter levels increases productivity, and, in turn, high productivity increases organic matter.

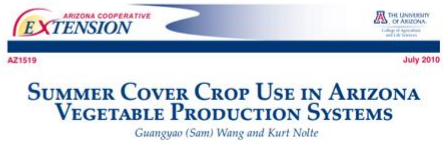


https://www.lsuagcenter.com/profiles/aiverson/articles/page1563205546102

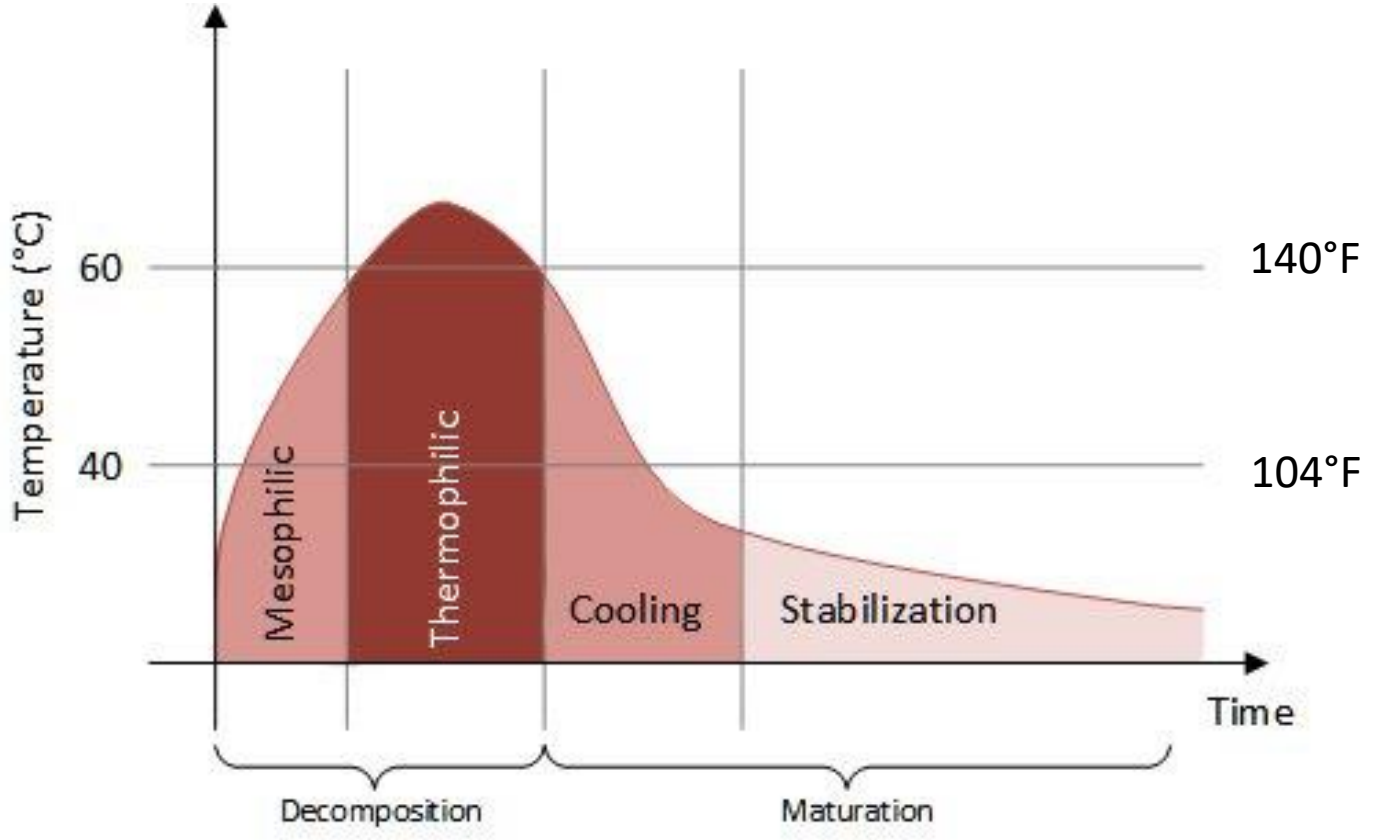
Ways to build organic matter

- Deep rooted perennial crops (alfalfa, orchards)
- Conservation tillage
- Crop rotation
- Secondary ‘cover crops’
- Compost

- Sudan grass
- Sesbania
- Sorghum
- Pearl Millet
- Melons
- Cotton



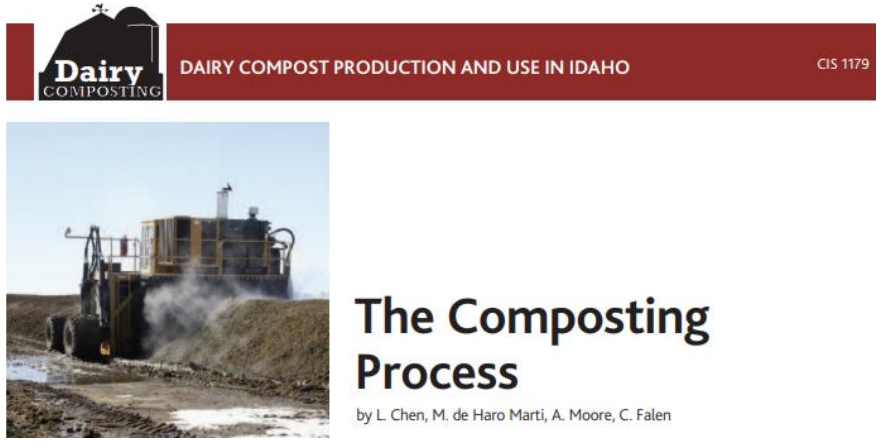
Manure to Compost Process



https://www.researchgate.net/publication/328754358_Composting_as_a_Service_A_Real-World_IoT_Implementation/figures?lo=1

Manure to Compost Process

- Microbial driven process
- Requires oxygen and water
- Windrow turning
- Site specific maturation time 1-12 months
- Optimal Moisture:
  - 50-60% by weight
  - Squeeze test: few drops when squeezed
  - Dry manure heats faster (fire hazard)
- Temperature: 130-150°F widely considered optimal



Industry Standards

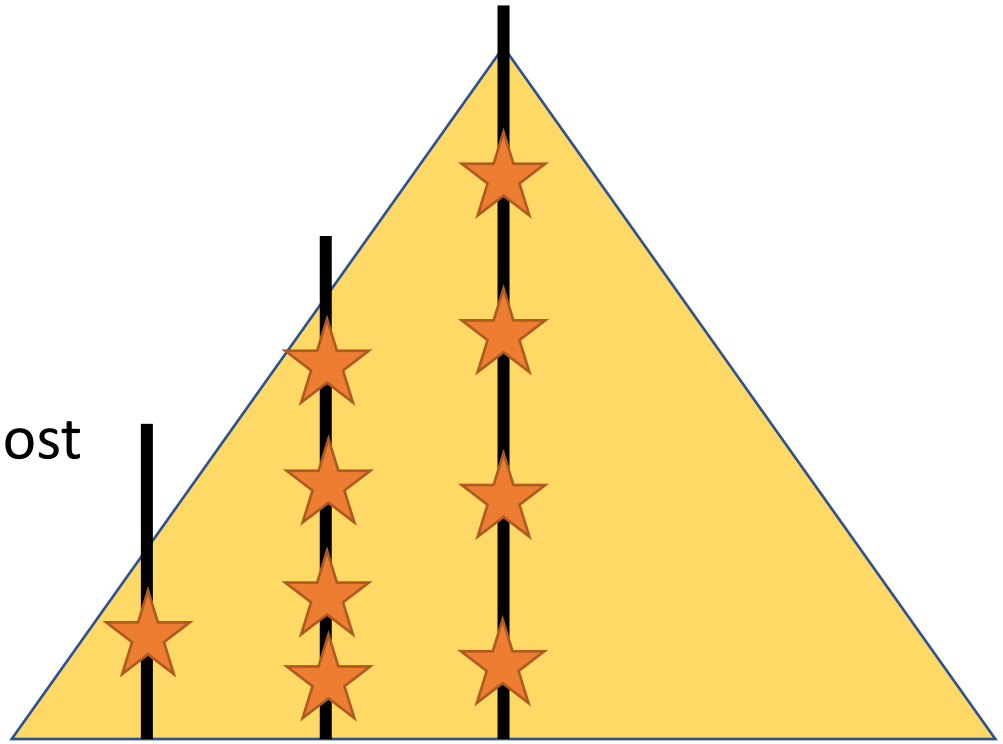
- Metal concentrations
- Lots: 1 per 5,000 cubic yards
- Composite sampling of 12 samples
  - Mid-pile: 4 heights
  - 1/4 width of pile: 4 heights
  - 1/8 width of pile: 4 heights
- Low pathogen load
  - Fecal coliforms: < 1,000 per gram of dry compost
  - Salmonella: < 3 per 4 grams of dry compost

WESTERN GROWERS®

APPENDIX E:

ENVIRONMENTAL HEALTH STANDARDS FOR COMPOSTING OPERATIONS

CCR Title 14, Division 7, Chapter 3.1, Article 7



Industry Standards

- Mandatory air, temperature, and time
  - ≥ 5 turnings
  - > 131°F
  - > 15 days
- Daily temperature checks
  - Thermophilic (heat sterilization) stage
  - 1 per 150 FT of windrow or every 200 cubic-yards
  - Probe depth: 12-24 in below soil line
- Record keeping required

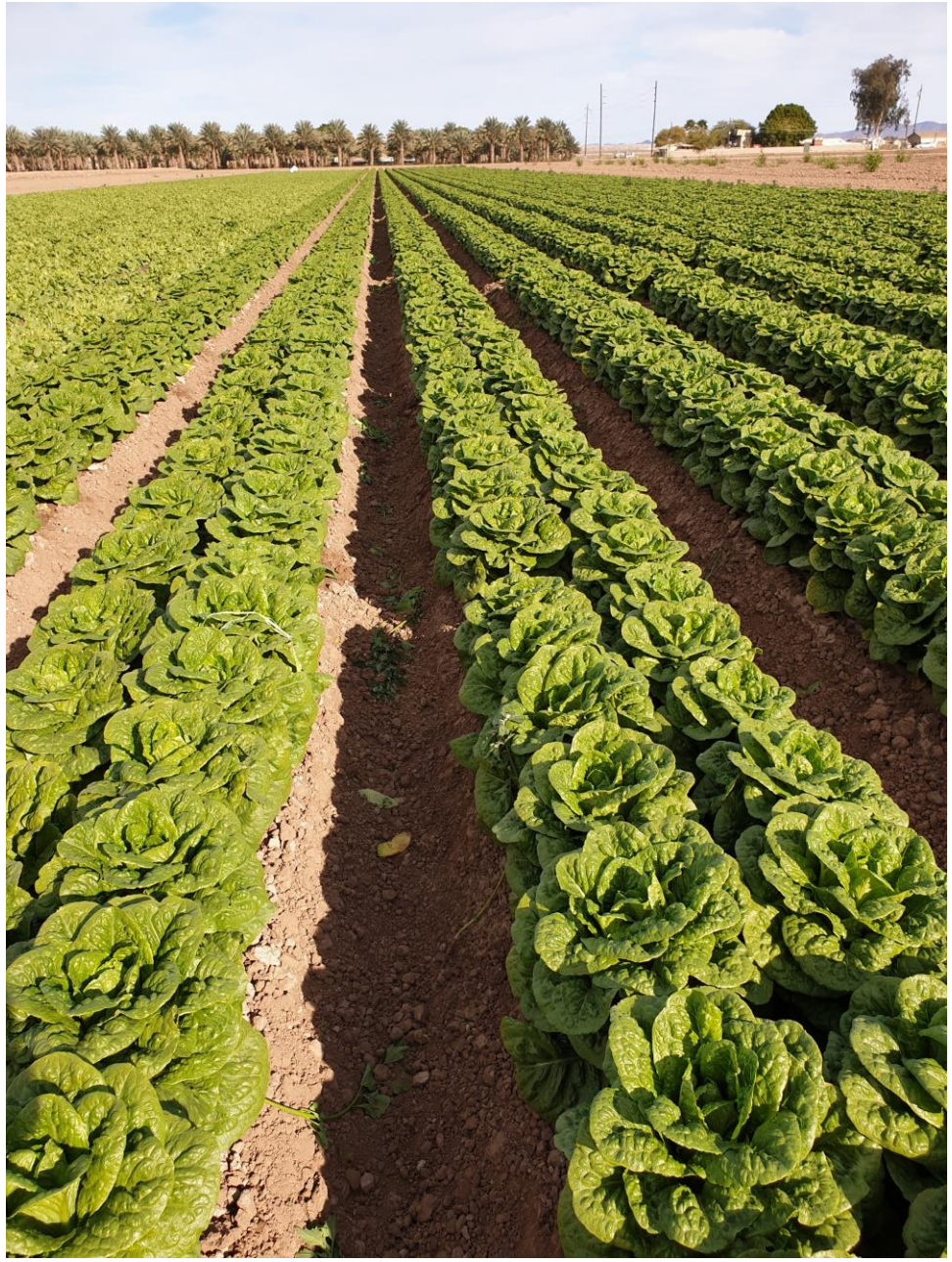
WESTERN GROWERS

CALIFORNIA LGMA
COMMITTED TO SAFE LEAFY GREENS
COMMODITY SPECIFIC FOOD SAFETY GUIDELINES
FOR THE PRODUCTION AND HARVEST OF LETTUCE AND LEAFY GREENS

ARIZONA LEAFY GREENS
ARIZONALEAFYGREENS.ORG

LGMA Compost Guidelines

- No raw manure or animal products
- Compost must be fully composted
- No biosolids
- 1 year plant-back after forbidden products are used



LGMA Compost Sampling Guidelines

- Required lab testing for harmful microorganisms
- Maximum allowable levels still being defined
- Random and representative sampling of each compost ‘lot’ before field application
- Certification of exposed compost expires 1 year or until disturbed
- Required documentation of lab testing

LGMA Application Guidelines

- Compost may not be applied 45 days before harvest
- Best spreading practices are encouraged to minimize leaf contact

https://www.wikihow.com/Wash-Romaine-Lettuce

https://fathers.com/s6-your-kids/c33-school-aged-kids/family-dinner-why/

Compost Handling

Best Management Practices

Good Neighbor Compost Handling Guidelines

- Compost hauling and spreading equipment is in working order
- Equipment cleaning practices & documentation
- Do not contaminate vegetable crops in adjacent fields
- Minimize ‘stacking’ time of compost delivered to the field
- Do not stack compost near waterways
- Compost exclusion zones near field borders
- Document delivery location and application methods

Good Neighbor Certificate Program

- On demand coursework
  - Video that cannot be fast forwarded
  - Questions in video
  - Comprehensive quiz after video
  - Printable certificate immediately after completion
- AZ-LGMA training certificate provided
- Spanish and English bilingual content

Summary

- Organic matter from compost is important to creating a healthy soil and helps with:
  - Moisture retention
  - Increasing CEC
  - Fertilizer efficiency
  - Salt reduction
  - pH buffering
  - Crop stability

animaliaproject.org/compost

Summary

- Steps should be taken to make sure compost has low levels of harmful microbes
- Rules are in place requiring compost to be made correctly
- Proper handling, sampling, and documentation is necessary in the compost industry to help reduce risk to the consumer

animaliaproject.org/compost

Let’s be good neighbors

- When handling compost think of ways to prevent contamination into other fields
- Be mindful of how your actions affect farmers and consumers
- Keep food safety in mind when you’re at the farm

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AZ LGMA guidance and metrics of soil amendments

- Do not store manure or compost near sources of irrigation water.
- Use soil amendment application techniques that control, reduce, or eliminate likely contamination of surface water and/or edible crops of all types being grown in adjacent fields.
- Minimize the proximity of wind-dispersed or aerosolized sources of contamination that may potentially contact growing crops.
- Prevent cross-contamination of in-process and finished compost (stored and/or stockpiled in temporary handling areas).
- Develop and implement appropriate means of reducing and controlling the possible transfer of human pathogens to soil and water that may directly contact edible lettuce/leafy green tissues using equipment.

www.steprimo.com