

5 class questions

1. Because organic mulches break down:
 1. They should be replaced or refreshed when needed
 2. They can tie up valuable nitrogen
 3. They should be avoided in southern Nevada landscapes
 4. They should be used in xeriscapes to improve desert soil

2. It is important to turn compost :
 1. At least twice a day
 2. Once a day
 3. Once every few days
 4. Only if it smells bad



3. Insects appear in compost :

1. If it is not well maintained
2. But they can be controlled with diatomaceous earth
3. So the compost should be sprayed with insecticide to keep them from spoiling it
4. If temperatures are too high

4. Mulch should be kept next to tree trunks (choose the correct answer):

1. To prevent weed emergence close to the tree
2. To keep the tree evenly moist
3. To keep the soil cool
4. Mulch should not be next to tree trunks

5. (True or false) Compost tea is the effluent that drains out of a compost bin, pile or tumbler



Using Mulch for Environmental Sustainability

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In this class, students will learn

- Why mulch– benefits to the landscape
- What kinds of mulch to use, and when
- Dealing with problems



What's mulch?

Something you put on the surface of the soil



Many benefits

- **Soil moisture - limits evaporation**
- **Moderates soil temperatures (high & low)**
- **Prevents weeds (esp. annual)**
- **Reduces soil compaction**



Benefits, cont.

- **Reduces soil erosion**
- **Improves landscape appearance**
- **Protects woody plant equipment**



MULCH

- Placed on the top of a planting bed to reduce evaporation, cool the soil &/or reduce weed growth



Mulch types

- Inorganic, e.g. mulching cloth
- Inorganic, e.g. gravel or rock
- Inorganic, e.g. shredded rubber
- Organic, e.g. straw or bark
- Living mulch



Inorganic Mulches

- **Non-living materials**

- **Rock**

- **Plastic**

- **Fabric**

- **Ground rubber**

- **Metallic**



Inorganic Mulches

Rock
Most commonly
used in
Xeriscape
(Desert
landscaping)



Desert Pavement



Rock Mulch Characteristics

- Affects microclimate – light, temperature & moisture (like all mulches)
- Reflects light
- Radiates heat
- Conserves soil moisture but may increase plant water use
- Provides no nutrients
- “Permanent”



Problems With Rock Mulch

- Adds no organic matter
- Reflects heat and light – can stress plants and increase heat around homes
 - Needs to be refreshed
 - Weeds can emerge
- Difficult to remove weeds
 - Trash collects



How does it increase stress?

more heat stress and higher
evaporative demand

Rock reflects heat (dry
air)

Soil and roots are
cooler



When Using Rock Mulches....

- Use a variety of sizes to block light from soil surface and improve water conservation
- Water mulch in to settle “fines” onto the soil surface → better weed control
- Double mulch: use a layer of landscape fabric beneath rock, not plastic.



Inorganic Mulches

- **Rock**
- **Plastic**
 - **Black plastic**
 - **Clear plastic**
 - **Colored plastic**



Important use for clear plastic: SOIL SOLARIZATION

<http://www.unce.unr.edu/publications/files/ho/2008/fs0829.pdf>



Placing a layer of heavy clear plastic over moist soil is an effective way to control weeds and disease.

FABRIC MULCHES

usually placed under another
inorganic mulch

Advantages:

- Porous
- Allows water and air
- Stabilizes soil
- Durable
- Easy to cut and apply
(usually under rock
mulch)

Disadvantages:

- Expensive
- Doesn't control
Bermuda and nutsedge



Metallic mulch

- Mainly for agriculture
- Also called “Reflective”
- Often an aluminized cover
- Used to reduce or deter insect pests
- May increase yields
- Reflected heat may be a big problem



Rubber mulch



Types of Mulches

- ❑ Inorganic
- ❑ Organic
- ❑ Living



Actions of organic mulch

- Insulating blanket for soil
 - Slows evaporation
 - Limits temperature extremes
- Control weeds
- Provides a unifying theme for a landscape
- Breaks down and improves soil



Myth

- Once, people were advised to add nitrogen fertilizer when using organic mulches because N becomes tied up by soil microbes breaking down the mulch
- NO research has found this to be true



Organic Mulches

From plant materials:

- Wood
- Pine needles
- Peat moss
- Paper
- Compost
- Manures
- Hulls, cobs, shells





Straw

- Generally for agriculture/horticulture
- Rarely for ornamentals

Bark

Generally for
ornamental
use



Pests of Organic Mulches

- Insects
- Rodents
- Diseases
- Weeds
- Visual
- Toxicities



Pests of Organic Mulches



Insects

- Grubs
- Roaches
- Termites



Pests of Organic Mulches

- Insects
- Rodents
- Diseases
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Rodents

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- May use mulch material for nesting
- May burrow into mulch
- May eat plants that are mulched



[Benefactor123](#) at [en.wikipedia](https://en.wikipedia.org)

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Pests of Organic Mulches

- Insects
- Diseases
- Weeds
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- Toxicities



Pests of Organic Mulches

- Insects
- Diseases
- Weeds
- Visual
- Toxicities

Mushrooms & other fungi



Pests of organic mulches

In general, if mushrooms or other fungi appear in a mulch, it is probably being kept too wet!

Pests of Organic Mulches

- Insects
- Diseases
- Weeds
- Visual
- **Toxicities**



Toxic Organic Mulches



- Oleander
- Eucalyptus
- Redwood
- Cedar
- “Sour” mulches



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Sour mulches

- Made with mainly hardwood
- Applied too thickly
- pH can drop ~~2.0~~ → or less
- Anaerobic layer forms
- Stench
- Phytotoxic



Living mulch

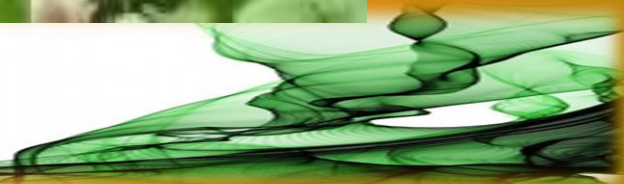
Grow a set of plants to crowd out weeds and recycle water vapor between desired plants and the living mulch.



Benefits of living mulch

- Weed control with fewer herbicides
- LM may be leguminous
- Unifies a landscape





Drawbacks

- Requires maintenance like any other plant
- Uses water
- May require pest control



Using mulch

- Reapply mulch when it is needed
- Organic mulch not more than ~3 inches (apply more thickly; it will compact.)
- Inorganic mulch not more than ~ 2 inches
- Keep mulches away from trunks and stems
- Use landscape fabric under inorganic mulch



OVERVIEW

- All plants benefit from some sort of mulch
- Match plant to mulch:
 - Desert plants, rock
 - Non desert adapted plants, organic



Break!

