

Lesson 10

Soil Amendments

Soil Amendment Defined

- Amendments are conditioners that are well mixed into the soil
- Technical distinction:
 - Mulch is a surface covering
 - Amendment is mixed into existing soil

Why amend soils?

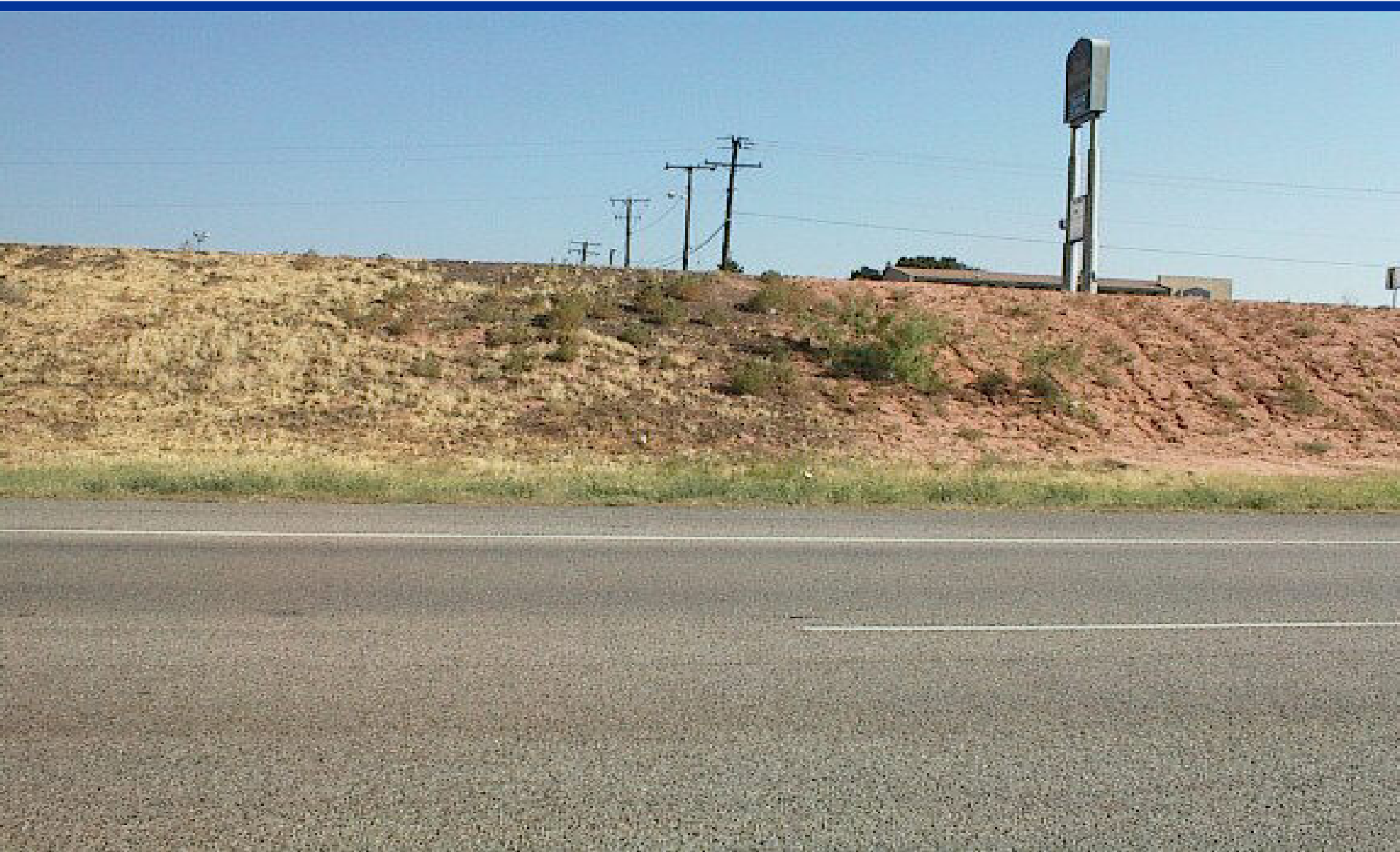
What are some reasons one might consider condition soil by amending it?

Why amend soils?

- Improved infiltration
- Improved aeration
- Reduced erodibility
- Reduced compaction
- Reduced clay content
- Difficulty in establishing vegetation
- Increased nutrients
- Increased moisture retention

Soil Amendments

Compost for Slope Stabilization



Soil Amendments

Vegetation Established



Types

- Amendments exist in two broad types
- Organic
 - Derived from living matter
 - Add materials useful to plants
- Inorganic
 - Mined or manmade materials
 - Physical “loosen” soil

Types

- Organic
 - Wood mulch – shredded, chipped
 - Agricultural crop fiber
 - Livestock manure
 - Peat
 - Grass clippings
 - Straw
 - Compost

Types

- Inorganic
 - Vermiculite
 - Perlite
 - Tire chunks
 - Pea gravel
 - Sand

Design Considerations

- Required longevity of amendment
- Existing soil texture
- Existing soil salinity
- Salt content and pH of amendment

Amendment Longevity

- Quick improvement requires a rapidly decomposing amendment
- Long-lasting improvement requires a slowly decomposing amendment
- For both advantages, use as mixture

Amendment Longevity

<i>Amendment</i>	<i>Decomposition rate</i>
Grass clippings, manures	Rapid decomposition (days to weeks)
Composts	Moderate decomposition (about six months)
Wood chips (redwood, cedar), hardwood bark, peat	Slow decomposition (possibly years)

Soil Texture

- Sandy soils
 - Amend to improve nutrient and moisture retention
 - Use organic, well decomposed amendments
- Clayey soils
 - Amend to improve aggregation, porosity, permeability, and aeration
 - Use fibrous amendments

Soil Texture

<i>Amendment</i>	<i>Permeability</i>	<i>Water Retention</i>
Fibrous		
Peat	low-medium	very high
Wood chips	high	low-medium
Hardwood bark	high	low-medium
Humus		
Compost	low-medium	medium-high
Aged manure	low-medium	medium
Inorganic		
Vermiculite	high	high
Perlite	high	low

Soil Salinity

- Avoid composts and manures high in salt if soils are already high in salt
 - Do a soil test to find out
- Some plants are very salt sensitive
 - A wrong choice of amendment for certain plants could be worse than no amendment

Amendment Salt Content and pH

- Be aware of salt content and pH of amendments
 - Avoid high-salt, high-pH amendments
 - Examples are wood ash and composted manures
 - Have organic amendments analyzed

Questions? Answers!

Q & A