

# Five Principals of Soil Health

# 1. Armor the Soil (cover)

- Controlling wind and water erosion
- Reduces evaporation rates
- Moderates soil temperatures
- Reduces rainfall impact
- Suppresses weed growth
- Habitat for soil food web

## 2. Minimize soil disturbance

- Biological
  - Overgrazing-limits ability of plants to harvest CO<sub>2</sub> and sunlight
- Chemical
  - Over application of nutrient and pesticide , can disrupt the soil food web functions
- Physical-tillage
  - Water and wind erosion
  - Ponding and crusting
  - Poor Structure-tillage makes mud
  - Soil Organic Matter depletion

# 3. Plant diversity

- Longer rotations, including cereals and perennials
- Cover Crops- extend the time microbial community receives root exudates (food)
- Warm Season Grasses
- Warm Season Broadleaf
- Cool Season Grasses
- Cool Season Brodleafs

# 4. Continual living plant/root

- Typical C-S rotation has extensive living root system for only 3 to 4 months. (May-August) (June-September)
  - Root exudates, increased food for soil livestock
  - Cover Crops build soil aggregates and pore spaces
  - Additional and deeper root channels, infiltration
  - Improved nutrient cycling, prevent leaching and improve water quality and cycling
  - Wildlife and pollinator habitat

# 5. Livestock Integration

- Balanced C/N ratios
- Reduced Nutrient Export
  - Re-cycle more nitrogen
- MOB or High intensity grazing of taller more mature grasses can put high carbon stems into contact with soil
- Fall grazing of cropland can allow winter stockpiling of pastures
- Spring grazing of cropland can get cattle on grass earlier with better growth of spring pastures
- Grazing a cover crop or forage after a wheat or cereal forage