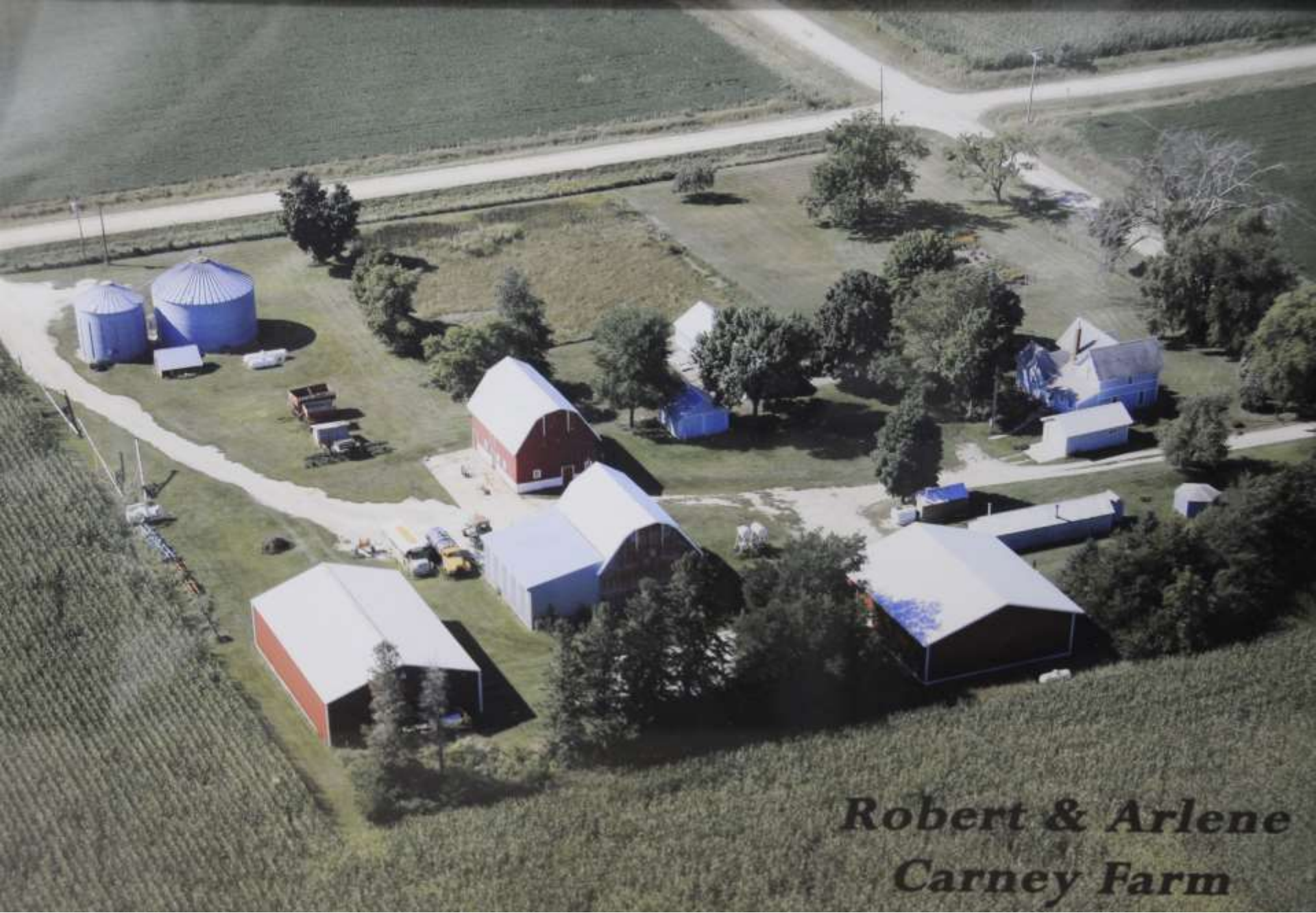


# PFI Field Day

September 6, 2018



*Robert & Arlene  
Carney Farm*





















Americans have been the greatest  
destroyers of land of any race or  
people, barbaric or civilized

— *Hugh Hammond Bennett* —

AZ QUOTES



























































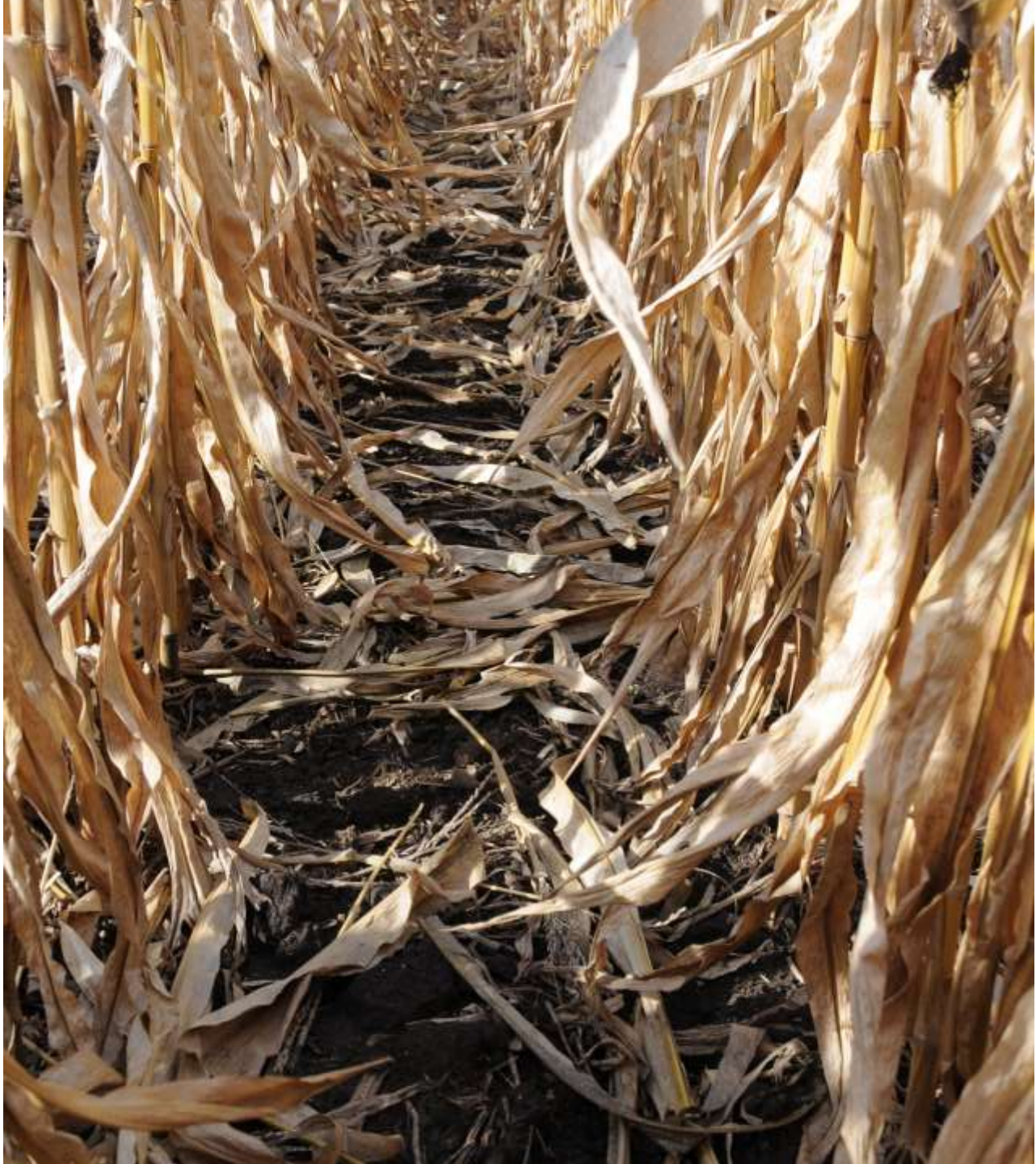




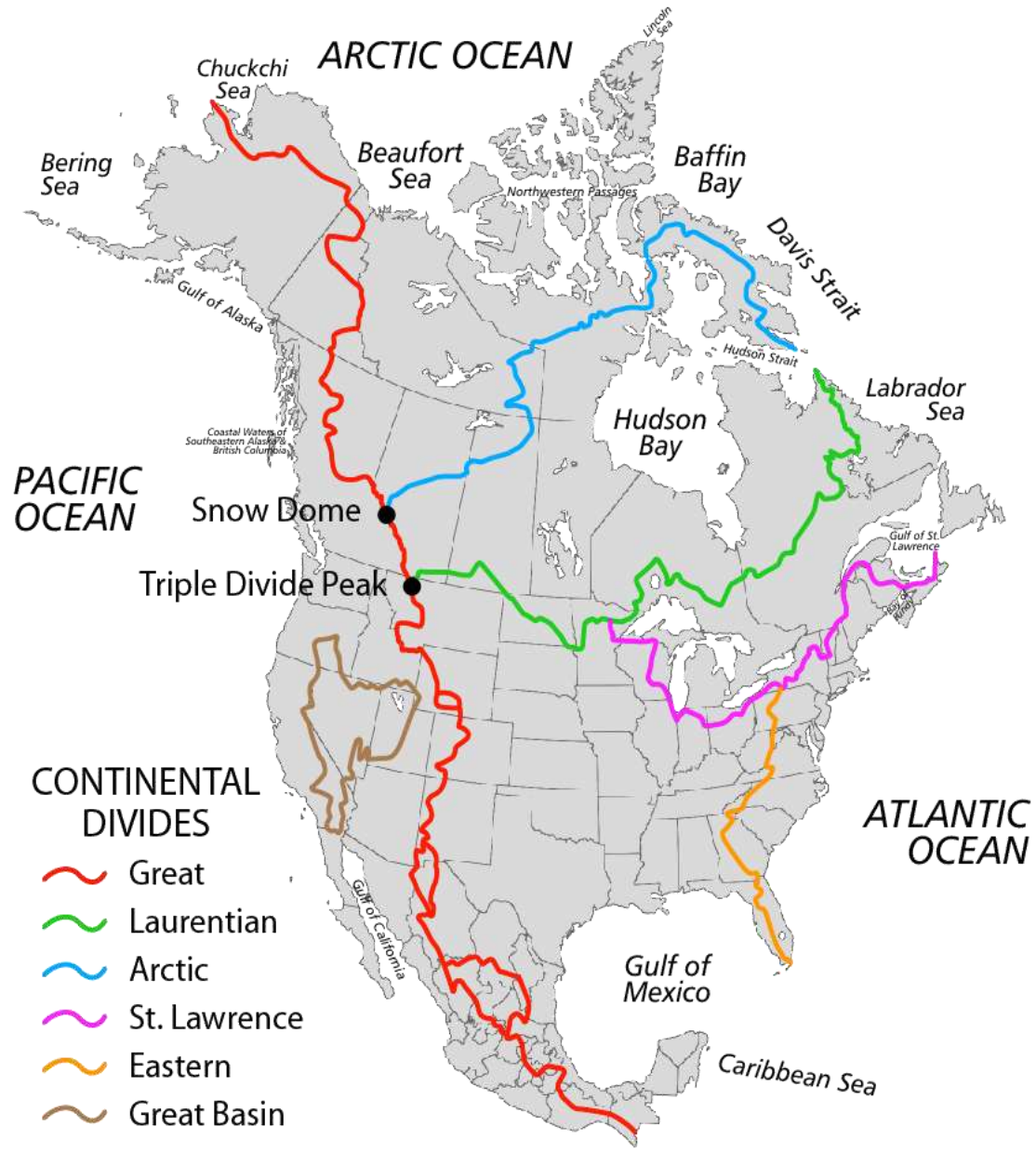








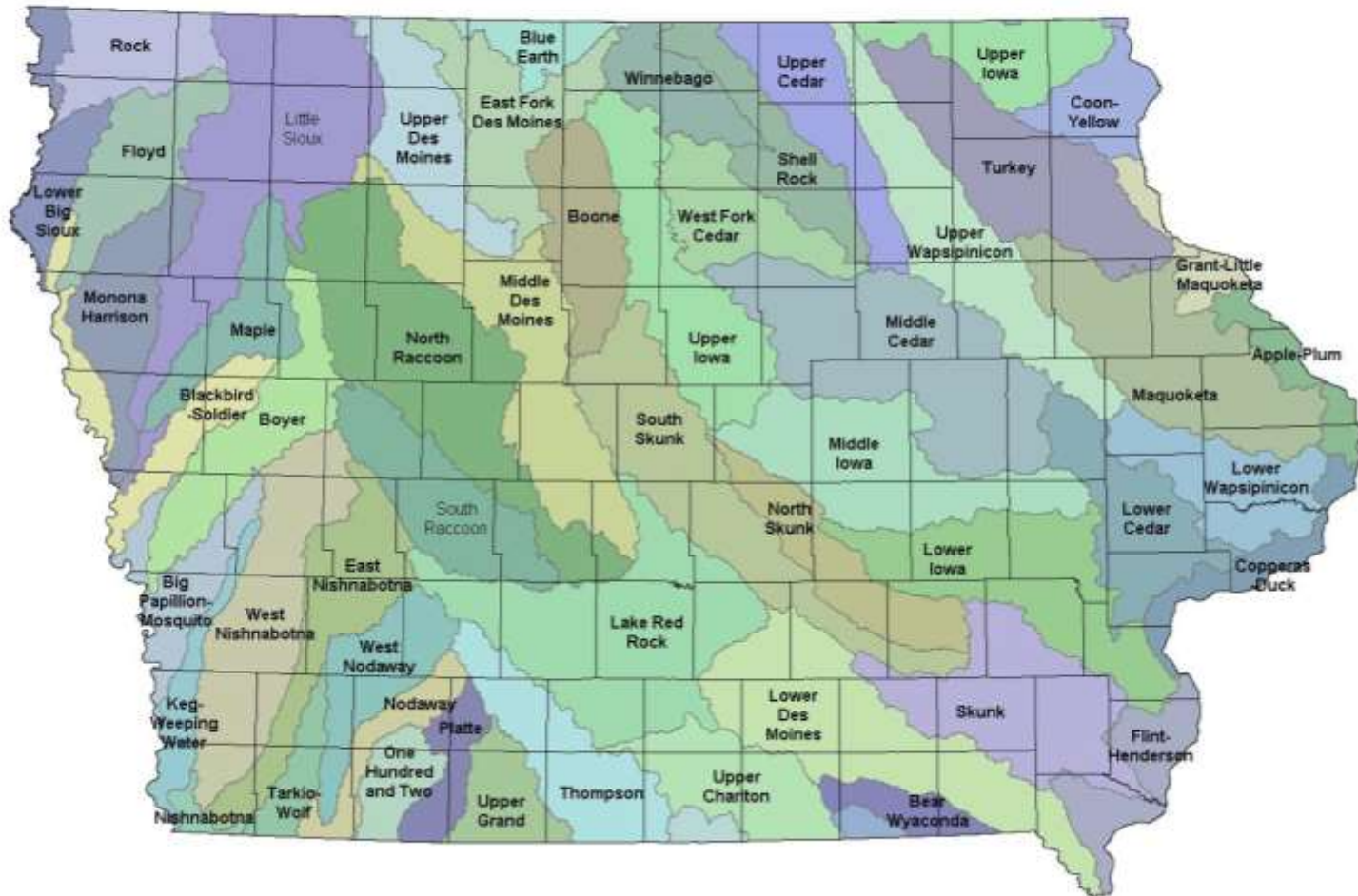




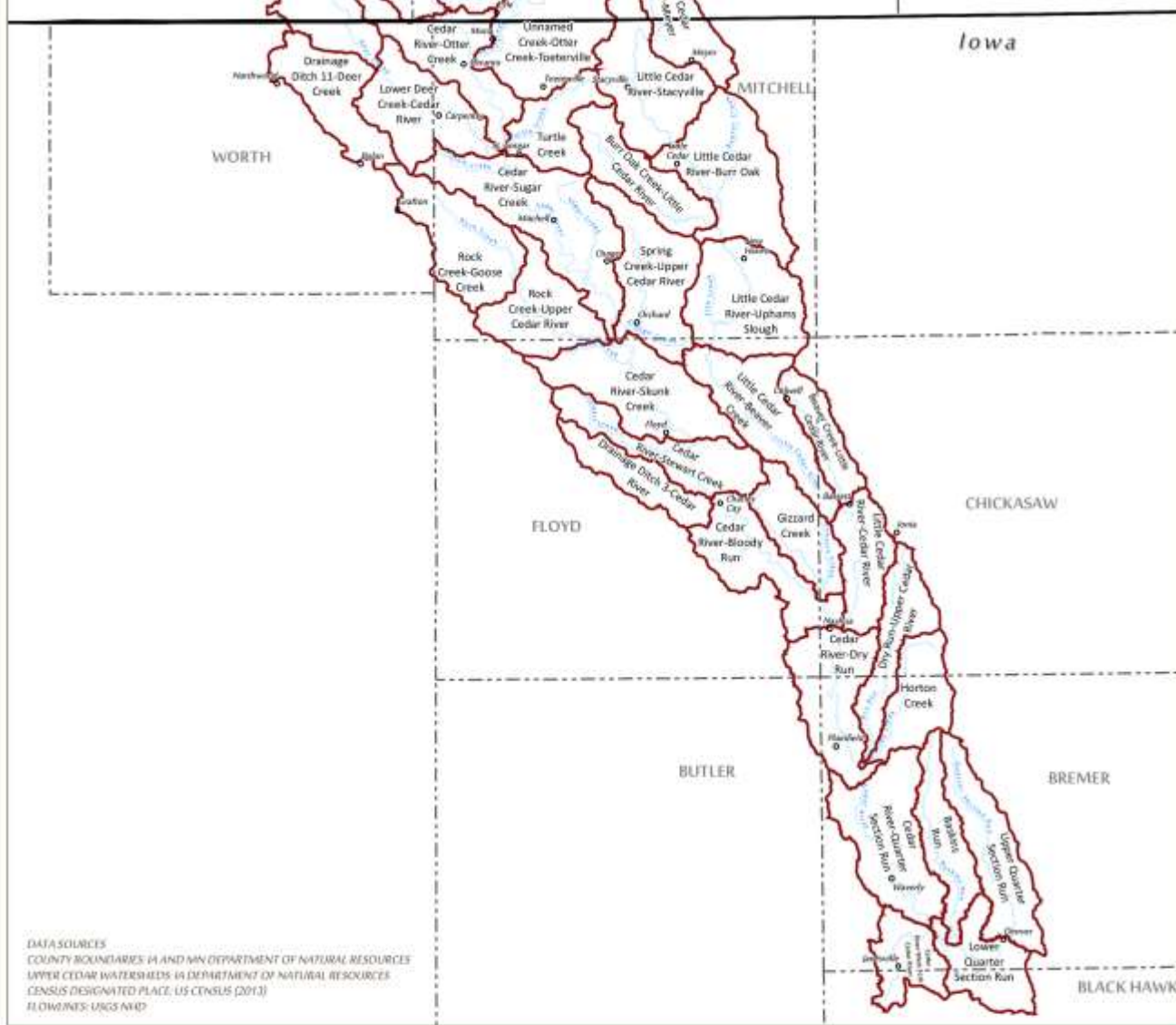


# Iowa Watersheds

Hydrologic Unit Code (HUC) 8







# SUBWATERSHEDS

FIGURE 2-2-1

UPPER CEDAR WATERSHED  
 MANAGEMENT AUTHORITY

Iowa Border	Named Flowline	
County		
Census Designated Place (2013)		
Subwatershed (HUC 12)		



# Watershed Concerns – Soil Loss

- Lost farmland productivity \$\$\$
  - 5 Ton – average Iowa loss/acre/year
  - 7 inches since 1850
- Reduction of value \$\$\$
  - Replace soil – under best conditions  $\frac{1}{2}$  Ton/acre/year
- Cost of repairs
- Loss of organic matter (water holding ability)
- Loss of nutrients
- Downstream sediment and nutrient issues
  - Effects on recreation and ecosystem



# Watershed Concerns - Water Quality

- Sediment pollution –
  - Soil carried by runoff – deposited in rivers, lakes
  - Reduced clarity
- Nutrient pollution
  - Water requires more treatment for human consumption
  - Nitrogen (N)
    - Leaches through soil profile or off the surface
  - Phosphorus (P)
    - Moves with eroded soil or sediment
  - N and P together
    - Can result in fish kills
    - Contributes to algae blooms, Gulf of Mexico dead zone



# Watershed Concerns – Water Quantity

- What has changed
  - Landscape has less cover – farm and urban
  - Climate change – rain events severity increased
  - Degraded and over tilled farmland not able to soak up and retain as much water
  - Historically wetlands provided more of a buffer to large events
  - Flood plain development and short memories



# Watershed Solutions – Soil Loss

- Remove Highly Erodible Land (HEL) from production
  - HEL land – conservation compliance required for insurance subsidies
  - CRP
  - Other uses and crops for marginal land
- Reduce tillage
  - Timing - eliminate fall tillage
  - Strip tillage
  - No till
  - Machinery economics
  - Cover crops
- Educate landowners
  - Preservation of land asset
  - Conservation leases

# Watershed Solutions – Water Quality

- Education on fertilizer and herbicide rates and timing
  - Conservation leases
- Less soil loss = less nutrient loss
- Residential property – not exempt
  - Reduce fertilizer and pesticide use
  - Keep organic material out of storm drain
  - Conserve water to slow runoff, use rain barrels and gardens
- Cost shared practices through IDALS and NRCS
  - Buffer strips, contour strips, saturated buffers
  - Bioreactors
  - Grassed waterways
  - Nitrogen Stabilization
  - Cover crops – salvage nutrients



# Watershed Solutions – Water Quantity

- Slow down water leaving the landscape
  - Less tillage keeps ground protected
  - Water retention structures for peak flows
  - Healthy soils increase absorption – Cover crops
  - 1% increase in OM holds 20,000 g more water/acre
  - Keep living roots in the soil profile – diverse soil biology















































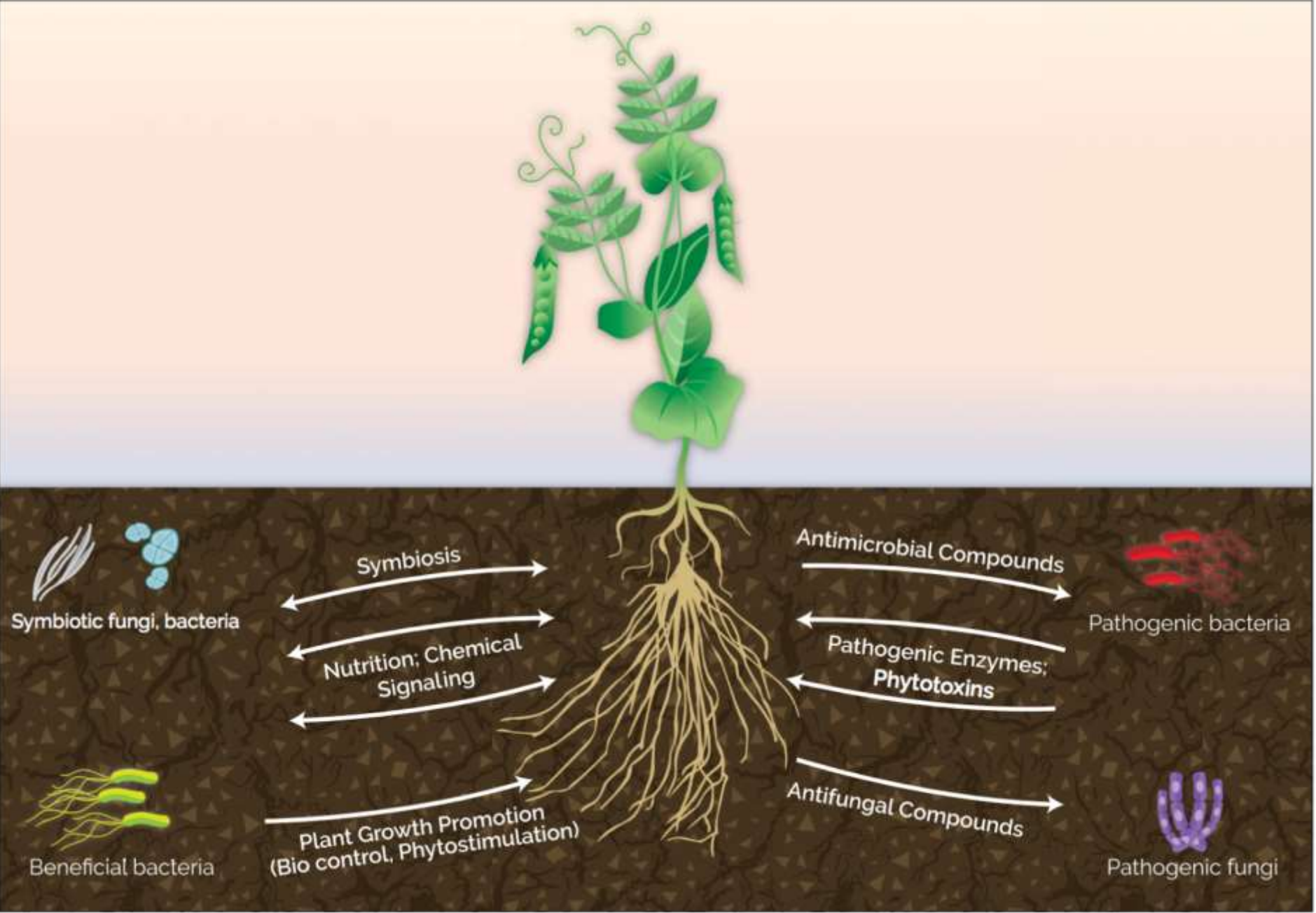












**Representation of the complex interactions** that take place in the rhizosphere between plant roots and microorganisms (from Haichar et al., 2014).





Peterson  
MO/IA Soil Health Specialist







# Farm Bill Conservation Programs

- Conservation Reserve Program – CRP
- Conservation Stewardship Program – CSP
- Environmental Quality Incentives Program – EQIP
- Farm and Ranchlands Protection Program – FRPP
- Grassland Reserve Program – GRP
- Wildlife Habitat Incentives Program – WHIP
- Wetlands Reserve Program - WRP



**HEALTHY**  
**SOILS**  
**ARE FULL OF LIFE!**

