Cover Crops & Water Quality

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Big Creek Middle Smoky Hill River Watersheds – Kanopolis Reservoir
Cover Crops & Water Quality

• What’s the Water Quality Issue?
  – Kanopolis Reservoir – sediment and eutrophication issues

• WHY? Total Maximum Daily Load (TMDL)
  – the amount of a pollutant that a body of water can have at any given time and still meet it’s designated use

• HOW? Reduce TMDLs for:
  – Total Nitrogen (TN)
  – Total Phosphorus (TP)
  – Total Suspended Solids (TSS)
  – E.coli bacteria (fecal coliform)
Pollutants, Sources & Issues

- **Total Nitrogen (TN) & Total Phosphorus (TP)**
  - **Source:** Human & Animal Waste and Fertilizer
  - **Issue:** Groundwater pollution, Algae blooms, Foul taste and odor in drinking water sources, and Depleted oxygen in water bodies can create fish kills

- **Total Suspended Solids (TSS)**
  - **Source:** Conventional tillage, fallow, overgrazing, overutilization, bare landscapes, streambanks, construction, etc.
  - **Issue:** Sedimentation

- **E. coli bacteria**
  - **Source:** Human & Animal Waste
  - **Issue:** Human health concerns
Benefits of Cover Crops

Cover Crops can be a dynamic component of any Cropping System regardless of what you grow and can create diversity in your systems!

https://mccc.msu.edu/

Midwest Cover Crops Council is a great resource for knowledge and information

Be sure to pick-up the Cover Crops Field Guide
Benefits of Cover Crops

- **Reduce Soil Water & Wind Erosion**
  - Living roots as many days out of the year = hold soil particles in place
  - Keeps plants and root systems in the soil profile
  - Keeps soil covered = reduces fallow periods
  - Improve water infiltration = less run-off

- **Conserve Soil Moisture**
  - Keeping soil covered with residue/cover crops reduces evaporation
  - Trap surface water and infiltration improves
Benefits of Cover Crops

– **Protect Water Quality**
  - Less run-off reduces TN, TP, TSS
  - Helps reach TMDL goals

– **Improve Soil Health**
  - Increase organic matter to soil profile
  - Tap roots can penetrate compacted soil layers
  - Increase the sequestration of carbon
  - Increase food for soil fauna like earthworms
Benefits of Cover Crops

– Reduce Fertilizer Inputs
  • Greater uptake of soil profile nutrients especially N
  • Scavenger for nutrients especially N

– Reduce Herbicide Inputs
  • Suppress weed pressure due to competition or canopy
Benefits of Cover Crops

– Reduce Fuel Costs & Equipment Operations
– Reduce Labor Inputs
– Reduce Feed Costs
– Extended Livestock Grazing
– Provide Wildlife Habitat
Obstacles of Cover Crops

- Future crop yield drag
- Reduction in soil moisture
- Herbicide resistance weeds
- Cost of seed & planting
- Seasonal labor limits
- Termination costs and timing
- Lack of equipment
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• Questions

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