Agricultural Production in High Organic Soils

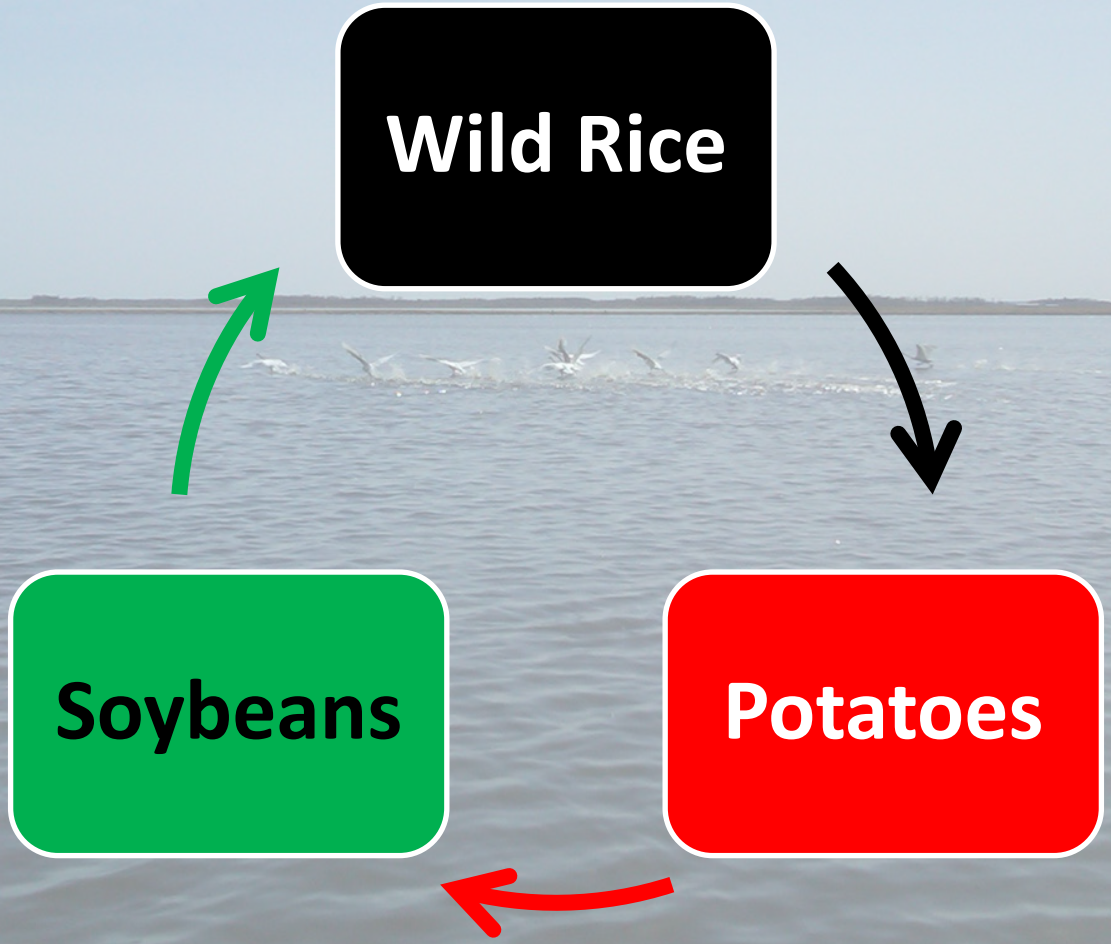
Minnesota NRCS State Technical Advisory Meeting

March 31, 2026

Soil Composition

- High OM levels-70%
- Neutral pH
- Water Management-Critical
- Tillage-Challenging

Production Cycle



Current Production

- Wild Rice
  - 2,000-2,700 Acres
- Potatoes
  - 450 Acres
- Soybeans/Yellow Peas
  - 1,600-2,000 Acres Soybeans
  - Up to 400 Acres of Yellow Peas

Crop Rotation

- Wild Rice
  - 4 Years
- Potatoes
  - 1 Year
- Soybeans/Yellow Peas
  - 3 Years
  - Peas in Year 3

Crop Rotation

- Fertility needs are complementary
- Few diseases in common
- No weeds in common
- Differing water needs
  - Risk Managment

Crop Rotation

- Wild Rice to Potatoes
  - Coming out of flooded environment
    - Greatly reduces weed pressure
    - Long rotation helps reduce soil borne disease pressure
  - High organic matter production in Wild Rice
    - Provides high water holding capacity and high fertility

Crop Rotation

- Potatoes to Soybeans
  - No additional fertilizer need
    - Soybeans utilize any remnant P and K
  - Few diseases in common
    - Reduced pesticide applications

Crop Rotation

- Soybeans to Wild Rice
  - Legume provides over 1/3 of Nitrogen need
    - Supplemental N added during growing season
  - Remnant P and K sufficient for 1st year of Wild Rice production

Water Management

- Pattern tile with Main Lines
  - Single outlet
  - Primarily 40’ spacing on laterals
  - Some areas at 20’ spacing
- Gravity flow outlets-No Tile Pumps
  - Ability to dewater with portable pumps
  - Tile runs all winter
- All tile is Trenched not plowed

Water Management-Row Crops

- Soybeans and Potatoes-Drainage
  - Tiling speeds removal of excess moisture
  - Timely fieldwork
  - Enhanced productivity
  - Capability of holding moisture in soil

Water Management-Wild Rice

- Wild Rice-Flooding
  - Pump water from river (electric pumps)
  - Gravity feeds into fields
  - Water depth controlled manually with outlets
    - Critical in pesticide/nutrient management
  - Land leveling minimizes water use
  - Pattern tiled-single outlet
    - Speeds drainage to allow for harvest/fieldwork
    - Minimizes ditching

Water Management-Wild Rice

- Pumping water in high flow conditions and releasing it at low flow
  - Retention ponds
- Water use permitting and monitoring
  - Irrigation permitting through Minnesota Department of Natural Resources
  - Flow monitoring by Watershed District
    - Minimum flow of surface water maintained
  - All pumping is monitored and reported annually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Questions?