Robert McKellip Drip Irrigation System



Project Location



•Location: •Canyon County, Idaho

•Completed •June 20th, 2012

•Funding •319 funds - \$30,000 •Producer - \$26,000+ •Total - \$56,000+

•Acres treated – 37.4

Resource Concerns

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- Water Quality (surface water)
 - Excess sediment & turbidity
 - 124 tons soil per year
 - Excessive nutrients & organics
 - 0.12 tons P per year
 - 1.87 tons N per year
 - Excessive pesticides in groundwater & surface water
 - WinPST med risk
- <u>Soil Erosion</u>
 - Irrigation induced erosion
 - 124 tons soil per year

- <u>Soil Condition</u>
 - Low SCI 0.19
 - Contaminants (fertilizer)
- Water Quantity
 - Requires 5ac/ft/acre (furrow)
 - Requires 2ac/ft/acre (sprinkler)
 - 112 ac/ft savings



Project Description - Before

- Existing system
 - Mint
 - Concrete ditch with siphon tubes
 - 60% efficient



- Basic irrigation water management
- Irrigation induced erosion rates
 - 3.32 tons/acre
- Tailwater runs directly into 303d listed stream

McKellip Project Goals

Improve water quality

Reduce tillage

Increase yield

Reduce nutrient inputs

Reduce pesticide inputs

Technical Assistance

 Technical assistance provided by NRCS and the Canyon Soil Conservation District

Technical Assistance

- Developed Conservation Plan
- Reviewed and approved the engineering design
- Completed Irrigation Water Management Plan
- Completed Nutrient Management Plan
- Inspected and certified irrigation system

Conservation Practices

Conservation Crop Rotation

- Improve Soil Conditioning Index (SCI), measures organic matter content
- Interrupts pest cycles

Irrigation System - drip

- Improve efficiency
- Reduce erosion

Irrigation Water Management – High Intensity

- Installed watermark sensors (measures soil moisture)
- Reduces pumping costs
- Optimizes soil moisture (less plant stress)
- Prevents leaching of mobile plant nutrients
- Reduces wear and tear on irrigation systems
- Increases yield

Nutrient Management

• Optimize plant growth while reducing risk to environment.

Project benefits - Environment

Eliminated irrigation induced erosion

 No sediment, nutrients, or pesticides enter 5 Mile Creek

Reduced water usage by 60%
187ac/ft to 75ac/ft

• Eliminated nutrient runoff from field

Reduced pesticide risk to environment

Improved soil quality

Project benefits - Producer

- Reduced Nitrogen inputs
 - 300 units to 100 units
- Reduced Pesticide applications & cost
- Increased yield
 - 20% estimated
- Increased lifespan of mint
 - Typically 4-5 years
 - 5-7 years expected less disease
- Reduced tillage costs
 - No need to clean furrows
- Reduced overall labor costs
 - Easy to operate
 - Operate remotely
 - No need to clean furrows and place siphon tubes



Public Benefits

- Olean water priceless
- Less risk of pesticide and nutrient contamination of groundwater & surface water
- Decreases demand for irrigation water
- Improves habitat for aquatic species
- Increases local agricultural production
- Provides business for local companies

Economics

- Fertilizer savings \$150/ac to \$50/ac = \$3,740
- Energy savings
 - Tillage **\$1,870**
 - Pumping costs **\$1800**
 - Misc. equipment (ATV's, Trucks, etc.) \$680
- Increased mint lifespan (1 year) unknown
- Labor savings \$2,960
- **Yield 20% increase = 20lb/ac = \$11,020
- Irrigation System costs Equipment + installation costs \$ 56,000 \$30,445 319 cost-share (60%), - \$25,555
- Total (per year savings) \$20,220
- Payback = 1.2 years with cost-share & 2.8 years without cost-share
 - *Project savings based on semi-permanent drip tape which lasts up to 7 years. The system filtration and pumps will last up to 15 years.
 - **Yield based on average price for mint. Also included the additional harvest costs for higher yields.

Partners

- Natural Resources Conservation Service
- Lower Boise Watershed Council
- Idaho Soil and Water Conservation Commission
- Canyon Conservation District
- Idaho Department of Environmental Quality































After

