Particule Phosphorus

Source, Transport and Control

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Components of a Sample of Water

100% Phosphorus

Water 40% Soluble Fertilizers

Sediment 60% Particulate Soils, Vegetation
Particulate Phosphorus

Potential Sources

- Soil Erosion
- Erosion of Canal Bottom
- Erosion of Canal Banks
- Floating Aquatic Vegetation (FAV)
Management Practices to avoid Particulate P

- Soil Erosion
  - Fallow fields Flooding
  - Land Leveling
  - Sediment Sump in Culverts
  - Canal Berms
- Erosion of Canal Bottom
  - Slow velocity when draining
  - High water levels in the canals
- Erosion of Canal Banks
  - Vegetation in canals banks
  - Gentle slope in canal banks
- Floating Aquatic Vegetation (FAV)
  - Canal Cleaning Program
Management Practices to avoid Particulate P

- Fallow fields
- Flooding
- Field Leveling
Management Practices to avoid Particulate P

- Sediment Sump in Culverts
- Canal Berms
Management Practices to avoid Particulate P

- Vegetation in canals banks
- Gentle slope in canal banks

**Effect of Velocity on Erosion Rate**

(Qualitative Illustration with relative units)

- Critical Velocity
- Erosion Rate = 3
- Erosion Rate = 13
- Erosion Rate = 36
Management Practices to avoid Particulate P

Water Pump Management

Event UF9200A-276 Year 2000
Particulate Phosphorus and Velocity

- Start-Up Flush
- Cumulative High Velocity
- Re-Start Flush
- Spike
- Pump Cycling
Management Practices to avoid Particulate P

Water Level Management

Correlation of Discharge TSS Concentration with Canal Level for UF9206N

Discharge TSS Conc. (mg/l)

Canal Level at Pump Station (m MSL)
Management Practices to avoid Particulate P

Water Velocity Control

- Limit maximum speed
- Pump for a long time at a low rate
- Long Pumping cycles are good, short pumping cycles are bad
- Determine critical water levels: Do not drain the farm below Stop elevations
Management Practices to avoid Particulate P

Canal Cleaning Program
Where to Place the Sediment

Best

Better

Bad
Management Practices to avoid Particulate P

Canal Cleaning Program
Floating Aquatic Vegetation Mechanical Removal
Management Practices to avoid Particulate P (Brainwashing)

- Soil Erosion
  - Fallow fields Flooding
  - Land Leveling
  - Sediment Sump in Culverts
  - Canal Berms

- Erosion of Canal Bottom
  - Slow velocity when draining
  - High water levels in the canals

- Erosion of Canal Banks
  - Vegetation in canals banks
  - Gentle slope in canal banks

- Floating Aquatic Vegetation (FAV)
  - Canal Cleaning Program
Particule Phosphorus

Source, Transport and Control

Luis M. Girado
Epilog

At 87, She is learning to remember

- Learn how to Learn
  Innovate