Particulate Phosphorus and Sediment Control BMPs

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What is Particulate P?

- Dissolved P in water **AND** Particulate P
- **Particulate P is in soils, sediments and vegetation**

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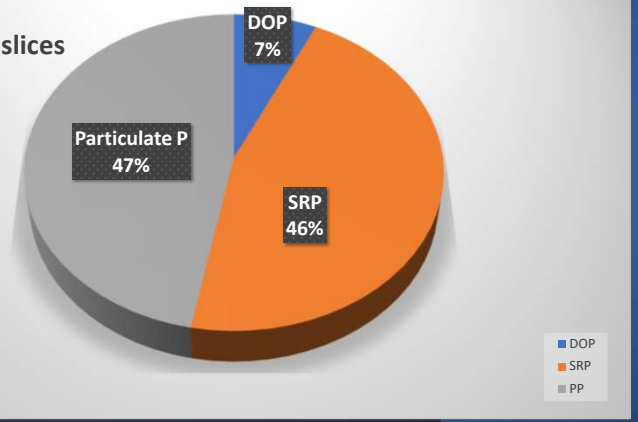
Who likes Pie?
What about Pie Chart?

3

Phosphorus slices



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Particulate Matter and Sediment Control BMPs

Phosphorus that is in soils, sediments and vegetation

BMP	PTS	DESCRIPTION
NUTRIENT CONTROL: MINIMIZE MOVEMENT OF NUTRIENTS OFF-SITE		
Nutrient Application Control	2½	Controlled application of nutrients; banding, controlled application
Nutrient Spill Prevention	2½	Formal spill protocols: storage, handling, transfer, and education/instruction
Rotational Vegetable Planting	2½	Rotation planting of high P/low P demand crops to avoid P build up
Plant Tissue Analysis	2½	Determines plant nutrient requirements via tissue testing
Soil Test Based Fertilization	5	Determine soil P requirements and follow standard recommendations
Split Nutrient Application	5	Applying split P without exceeding total recommendation
Slow Release P Fertilizer	5	Specially treated fertilizer
Reduced P Fertilization	5	P application rate is at least 30% below recommendation
WATER MANAGEMENT: MINIMIZE THE VOLUME OF OFF-SITE DRAINAGE DISCHARGE		
½ Inch Detained	5	Delay discharge: based on measuring daily rain events using a rain gauge
1 Inch Detained	10	Delay discharge: based on measuring daily rain events using a rain gauge
Improved Infrastructure	5	Re-circulate water; fallow field flood; increase water detention
Water Table Management	5	Optimizing drainage and irrigation schedules to decrease discharge
PP AND SEDIMENTS: MINIMIZE MOVEMENT OF PARTICULAT MATTER AND CANAL SEDIMENTS		
Any 2 Any 4 Any 6 Any 8	2½ 5 10 15	• Leveling fields • Slow drainage velocity near pumps • Grassed swales/field ditch connections • Ditch bank berms • Canal cleaning program • Aquatic weed control • Field ditch drainage sumps • Barriers at discharge locations • Ditch bank stabilization • Sediment sump/trap in canals • Soil stabilization through infrastructure improvements • Cover crops • Culvert bottoms above ditch bottoms • Vegetated ditch banks
Other BMPs	TBD	BMPs proposed by permittee and accepted by SFWMD

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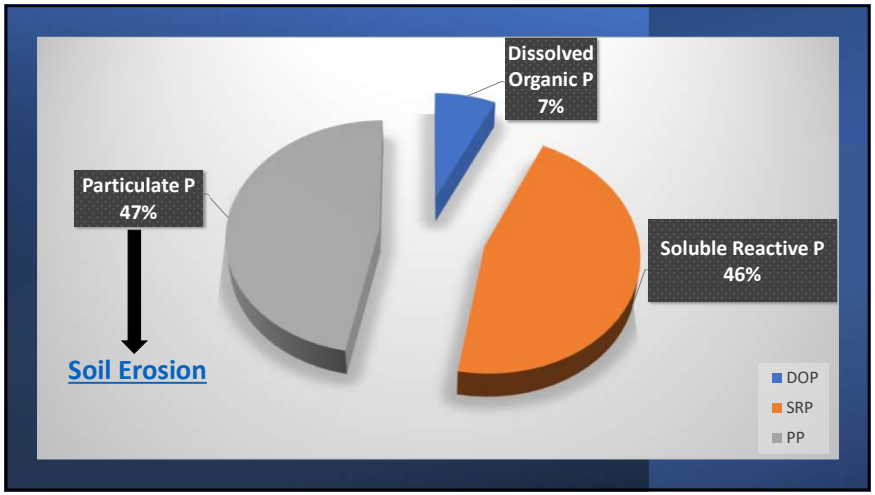

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Potential Sources of Particulate Phosphorus

1. Soil Erosion from fields
2. Soil Erosion of Canal Banks
3. Erosion of Canal Bottom (Canal sediments)
4. Floating Aquatic Vegetation (FAV)

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7. Ditch bank berms
8. Field ditch drainage sumps
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Cover Crops (i.e. Rice)

Flooded Fallow Fields

- ✓ Minimizes soil erosion; Reduces soil subsidence
- ✓ Serve as drainage water storage pond. Important to recirculate water before pumping.

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Land (Laser) Leveling

- Reduces sheet and rill soil erosion
- Improves water management
- Uniform field drainage reduces P loads
- Better cover crop and crop yields

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Canal and ditch maintenance

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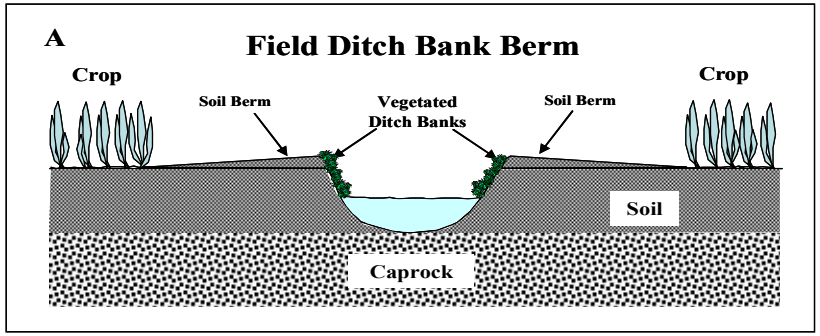
Ditch and Canal Bank Berms



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Minimize erosion of canal and ditch banks

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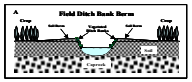

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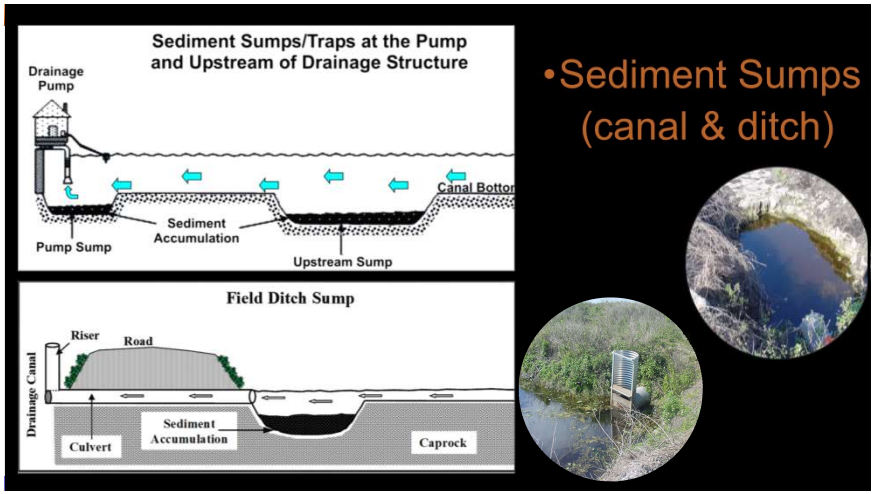

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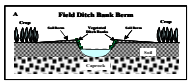

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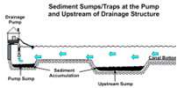

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Aquatic vegetation

Is there a difference in Particulate P between these two canals?

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Aquatic weed control

- Spot spraying with approved aquatic herbicides to avoid FAV infestation (spraying an infestation can lead to massive FAV death and high P discharges).
- If infestations occur, harvest FAV mechanically and put it back in empty fields to compost.

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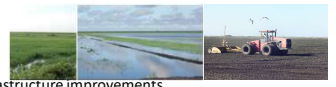

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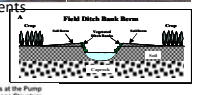

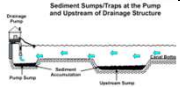

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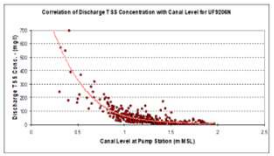
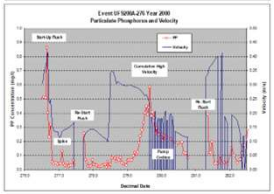
Slow drainage velocity near pumps





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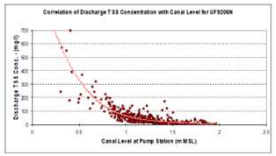

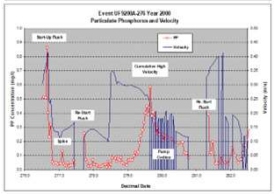

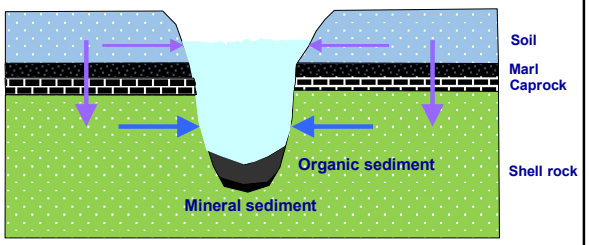

- Slow drainage near pump station
- Determine critical water levels: Do not drain the farm below Stop elevations

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Canal Cleaning

Canal Improvements

- ✓ Place excavated materials away from top of banks when possible.
- ✓ Most beneficial when conducted during irrigation periods

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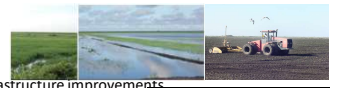

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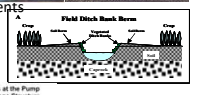

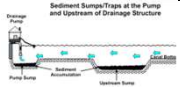

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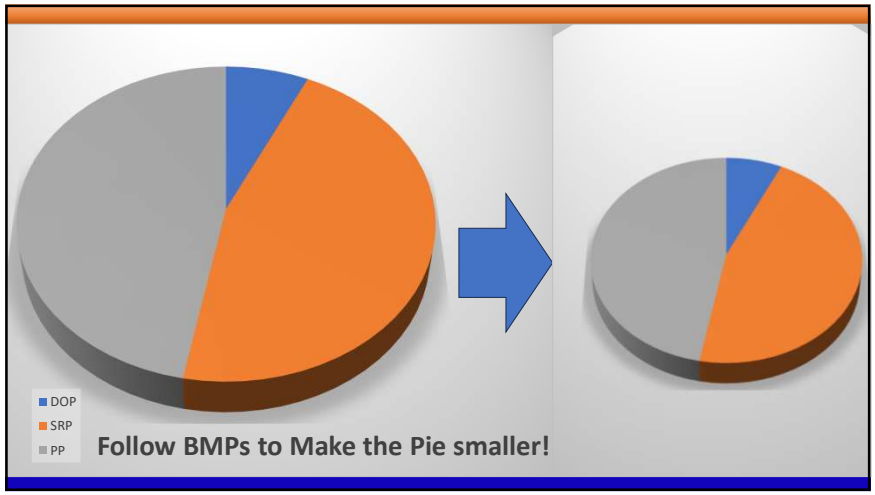

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Thank you

- Please refer to the following EDIS publications for more information:
- https://edis.ifas.ufl.edu/ss448
- https://edis.ifas.ufl.edu/ss410
- https://edis.ifas.ufl.edu/ss417

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